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A Study of the Performance of Boys and Girls, Grade One Through Three, Taught by the Classroom Teacher and by the Physical Education Specialist

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A STUDY OF THE PERFORMANCE OF BOYS AND GIRLS, GRADE ONE THROUGH THREE, TAUGHT BY THE CLASSROOM TEACHER AND BY THE PHYSICAL EDUCATION SPECIALIST

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INTRODUCTION

In the middle of the Twentieth Century the American educational system found itself in a crisis--put to test by the simultaneous strains and pressures of an array of formidable challenges: the population explosion, the rapid increase in knowledge, and the demands for a vast new supply of highly trained manpower.

(1) The Tidal Wave of People. In 1945 the United States Census Bureau predicted that the population might reach 165 million by the end of the century. That figure was reached, however, not in fifty years, but in ten. A clock and chart in the Department of Commerce in Washington, D. C., record for the United States one birth every 7.5 seconds, one death every 19 seconds, one immigrant every 1.5 minutes, and one emmigrant every 23 minutes--for a net gain of more than 8,000 persons each day and about 3 million each year.[1] At all levels, public education struggled with the logistics of the swelling enrollments: a shortage of buildings, too few classrooms in existing buildings, a shortage of supplies of all kinds, a shortage of teachers and leaders, larger classes, and, inevitably, restricted enrollment in colleges and universities. The problems created by the population explosion alone were a severe burden on the schools, but, unfortunately, shared the attention of educators with two equally demanding and unprecedented pressures.

(2) The Explosive Increase in Knowledge. A second major source of pressure for change has been the exploding nature of

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1. Robert W. Tyler and Richard I. Miller, "Social Forces and Trends," National Education Association Journal, (September, 1962), p. 28.

the world of knowledge. We are learning almost too much too fast about more and more. Educators were given the formidable task of selecting what to teach. Goodlad suggests that if the accumulation of knowledge were plotted on a time line, beginning with the birth of Christ, the first doubling of knowledge occurred in 1750, the second in 1900, the third in 1950, and the fourth in 1960.[2] Recent discoveries in the academic disciplines have critical meaning for course content in the public schools, but the rapidity with which these changes are made is staggering as the schools try to reflect the current state of the discipline.

(3) Demands for a Vast New Supply of Highly Trained Manpower. One aspect of this new knowledge that is alarming in its potential is automation. While breathtaking developments in science and technology have solved certain problems in modern life, they have created others with deep ramifications for our social structure and for international politics. A man born sixty years ago in the horse and buggy age may live to see the dawn of interplanetary travel, and machines capable of thinking. As machines relieve men of much of the manual and mental effort, they will also cause increasing social upheaval and uncertainty, with great shifts in the pattern of employment. There will be fewer opportunities in unskilled and skilled labor, and greater demands for scientists, engineers, teachers, persons in the health professions and in other fields requiring post high school education. International tensions in the Korean War and its aftermath, the "Cold War," heightened the pressures upon the schools for change, by adding a note of urgency to the needs.

In the Fifties some elements of the crisis were partially resolved, particularly the quantitative ones which increased tax revenues could supply. But many forces were at work to direct public attention to the question of quality and content. When this mood would have been converted into action by its own momentum, one can only guess, because in October, 1957, the

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2. John I. Goodlad, "Changing Curriculum of America's Schools," Saturday Review of Literature, (November, 1963), p. 65.

Russians successfully launced Sputnik I and so gave the public and the government the emphatic push into action.

In the wake of Sputnik, American education has undergone an evaluation never previously experienced. While the public school system has never been without its critics, there now came a raging torrent of charges and countercharges about the effectiveness of the schools. Among the new critics were generals and admirals, tradesmen, politicians, scientists, and industrialists, with accusations of quackery in education, protests that Johnny couldn't read, and that the schools were failing to prepare youths for higher studies and for responsible jobs. Newspapers and magazines alarmed and excited the American public as they spoke of a death struggle, with education as the instrument of national survival, and brainpower, the vital and ultimate weapon.

Out of all of this soul-searching has come an emphasis upon excellency which is permeating every aspect of our schools. A study of instructional changes which occurred in the state of New York between 1953 and 1960 revealed that the "rate of instructional innovation....more than doubled within fifteen months after the firing of Sputnik I on October 4, 1957."[3] Nor was New York unique in its almost frantic pursuit of excellence; the results are apparent throughout the United States: (a) increased interest in foreign language programs, (b) more science and mathematics for the academically able students, (c) an over-all acceleration in the curriculum, with a demand for subject matter specialists, (d) departmentalization and team teaching, (e) new curricular content, (f) programmed learning, (g) educational television, and (h) a notably imaginative approach in the construction of school buildings and the organization of time, space, and personnel in the buildings.

Because many of these experiments violated some of the most

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3. Jean Dresden Grambs, Schools, Scholars, and Society, p. 10.

sacred axioms of the teaching profession, they met with vigorous and often bitter opposition from teachers, administrators, and some of the most prestigious teacher training institutions. Team teaching, and particularly the addition of the subject matter specialist, ran directly counter to the prevailing view that the elementary school classroom must be "self-contained," with one teacher accepting the responsibility for all aspects of instruction throughout the school day. Stated simply, the present controversy centers about two diametrically opposite points of view: Those who believe that because of the increasing accumulation and importance of modern knowledge, it is no longer possible for the elementary school teacher (with present traditional training) to be capable of teaching all subjects to all children in a class with equal skill and effectiveness. On the other hand, others believe that scientific studies of human growth and development indicate that it is more important for an elementary school child to have a close relationship with one teacher who will be in a position to understand him and provide for his individual differences in ability, maturation, and potential.

One aspect of this controversy--Who should teach physical education in the elementary grades: the classroom teacher or the physical education specialist?--will be examined in this paper.

DELIMITATIONS

Because of the controversial nature of the problem, the author proposed the following course and limitations within which this investigation will be conducted:

(1) a review of the basic research which has been offered and in which the authors have suggested findings specifically applicable to this study; i. e., elementary physical education.

(2) a review and a sampling of representative empirical judgments found in professional journals, textbooks, and other literary sources.

(3) a test of the null hypothesis, in which the physical fitness of children in the primary grades (1, 2, 3) taught by the physical education specialist and by the classroom teacher in a self-contained classroom will be compared statistically.[4]

(4) findings which are suggested by the above test of the null hypothesis.

(5) The author's conclusions drawn from the entire investigation, and the relevance, if any, of the study included herein to the problem as stated.

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4. The following definitions and interpretations are those which have meaning in this test (more specific terms are defined as the need arises):

a. physical fitness--For purposes of this study, the concept of physical fitness is used interchangeably with motor fitness, and is limited to these components: muscular strength and muscular endurance, floxibility, speed, agility, and, to a lesser extent, muscle power, and coordination.

b. physical education specialist--For this study, the term specialist was assumed to mean more than the assignment of a teacher to a particular field. The author's frame of reference for the elementary physical education specialist includes: (1) at least one degree with a major in physical education, (2) a supervised teaching experience in the elementary grades, and (3) recommendations attesting to skill in teaching elementary school age children.

c. self-contained classroom--The self-contained classroom is a term used to describe a plan of curriculum organization in which one teacher instructs the pupils of a certain class in all, or nearly all, the studies of a grade.

CHAPTER II

A SURVEY OF RELATED RESEARCH

A. THE SUBJECT-MATTER-SPECIALIST IN RETROSPECT

The earliest examples of departmentalization, or subject-matter-specialists, in American schools were in the Colonial Reading Schools and Writing Schools in Boston in 1789.[1] Pupils attended alternate sessions, according to the teacher's ability to teach reading or to teach writing and ciphering. This departmental structure was maintained with the addition of arithmetic and language in some of the schools, but its effectiveness and inherent simplicity must be appreciated in contrast with Dunn's estimate that by 1945 the total number of subjects and areas of special emphasis had reached twenty-four in the elementary school.[2]

The antithesis of the departmental school also originated in Boston when Philbrick organized the Quincy Grammar School in 1848, a graded school with one-teacher-per-grade or class, an innovation which has had greater impact on elementary education than any other, and which was the forerunner of what has now come to be characterized as the self-contained classroom.[3] For the next fifty years, the one-teacher-per-class plan was the dominant organization found in elementary schools, with little thought of departmentalization.

With the advent of the Twentieth Century, however, the prevailing favor with each of the plans alternated with greater rapidity. A summary of the trends by decades from 1900 to 1960 follows:

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1. Henry J. Otto and David C. Sanders, Elementary School Organization and Administration, 4th Edition, p. 75.

2. Mary Dunn, "Should There Be Any Set Type of Elementary School Organization?" Elementary School Journal, (December, 1952), p. 200.

3. Otto and Sanders, loc. cit.

1900-1910: A renewed interest in departmentalization, with evidence of an increasing number of such organizational patterns during these years.[4]

1910-1920: Interest in specialist teachers for separate subjects grew; however, the one-teacher-per-class pattern of organization became more widely used.[5]

1920-1930: Despite wider use of one-teacher-per-class than any other plan, a dissatisfaction with it and a need for something better, seems to have been felt. Dunn reported that departmentalization ranged from 5% in primary grades (1-3) to 37% in grade six.[6] In 1929 Otto found some form of departmentalization in 84% of eight-year elementary schools, and in 37% of six-year elementary schools.[7]

1930-1940: This decade witnessed a constant and intense debate between the proponents of the two organizational plans, with each side claiming the same virtues for these two essentially different practices. Dunn reported that departmentalization ranged from 7% in primary grades to 33% in grade six, during this period.[8]

1940-1950: Growing acceptance of the philosophy of total child growth and development was marked by the predominance of one teacher classrooms and by the opinions of educators. More schools reported giving up departmentalization than adopting it, although in more and more schools, art, music, and physical education were being taught by special teachers.[9] Dunn reported that departmentalization ranged from 3% in

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4. Ibid.

5. "Elementary School Organization, "National Elementary Principal, (December, 1961), p. 104.

6. Dorothy G. Petersen, The Elementary School Teacher, p. 370.

7. Otto and Sanders, loc. cit.

8. Petersen, loc. cit.

9. Lawrence O. Lobdell and William J. Vanness, "The Self-Contained Classroom in the Elementary School," Elementary School Journal, (January, 1963), p. 215.

primary grades to 18% in grade six.[10] Toward the end of the decade, however, the plan for different teachers for each subject once again was gaining in its advocates. In 1949 the Research Division of the NEA surveyed 1,598 city school systems, and found 51% practiced departmentalization in one or more elementary grades in one or more schools of the city systems.[11]

1950-1960: According to one writer, departmentalization again seemed to be increasing, mostly in the intermediate grades, and in schools with the 8-4 pattern.[12] At the same time a national survey revealed that 76.5% of the schools were organized on the one-teacher-per-class basis in grades 1-6, 9.9% reported partial departmentalization, and less than 1% were completely departmentalized.[13] The difference in the two observations lies in the fact that in Dean's survey, the employment of special teachers of art, music, and physical education did NOT constitute departmentalization. During this decade, also, some studies by physical educators emerged: In 1950 Carl Troester reported that the classroom teacher was responsible for teaching elementary (K-6) physical education in 80% of the nation's schools.[14] The 1951 Baker study of supervisory practices in 103 public school systems in 28 states revealed that in 55% of the systems the classroom teacher carried the major responsibility for physical education instruction, in spite of the fact that 80% of the schools' teachers lacked the background for teaching rhythms and the basic skills.[15] Highlights

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10. Petersen, loc. cit.

11. Otto and Sanders, loc. cit.

12. Lobdell and VanNess, loc. cit.

13. Otto and Sanders, loc. cit.

14. Carl A. Troester, Jr., "Report of the President," Journal of Health, Physical Education, and Recreation, (May, 1950), p. 279.

15. Gertrude M. Baker, "Supervision of Physical Education in the Elementary Schools of the United States," Research Quarterly, (December, 1952), pp. 279-90.

from a nationwide survey conducted by Elsa Schneider,[16] specialist in health, physical education, recreation, and safety in the U. S. Office of Education, during the school year 1955-56 revealed the following practices with regard to the existing elementary school physical education programs:

> Day-by-day instruction in physical education is provided for children by:
>
> > Classroom teachers who do not have the help of specialized personnel in physical education in 26% of grades 1-3 and 16% of grades 4-6.
> >
> > Classroom teachers who have the help of specialized personnel in physical education in 62% of grades 1-3 and 54% of grades 4-6.
> >
> > Special teachers of physical education in 12% of grades 1-3 and 29% of grades 4-6.

1960-66: In a 1961 poll of 721 principals' opinions about school organization, 70% preferred the self-contained classroom, and only 30% preferred departmentalized classes. There was little difference between opinions of principals in small districts and those in large districts. Of those preferring departmental organization, only 7% recommended its use in grades 1-3, 32% in grade 4, 37% in grades 5-6, and 23% in grade 7. The subject areas recommended for departmental teaching were science--61%, math--61%, English--54%, social studies--40%, music and art--28%, physical education--20%, all subjects--13%. In the same poll, principals reported their schools were organized in grades 1-6 in the following manner: 42% all grades self-contained for all instructional areas, 40% all grades self-contained except for special areas, and 9% reported primary grades self-contained and upper grades departmentalized. An interesting finding in the percentage table is that a higher percentage of principals

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16. Physical Education in Urban Elementary Schools, United States Office of Education, Bulletin Number 16.

in small school systems than in large systems reported special subjects departmentalized. One explanation is that small schools tend to have itinerant teachers for special subjects, while large systems tend to have supervisors in these areas with classroom teachers instructing pupils.[17]

Barnes reported in 1962 on the status and trend in departmentalization, concluding that there was no change in the practice of departmentalization in the majority of city elementary schools. On the contrary, he found a definite trend toward increasing departmentalization in schools in smaller cities, especially in the last two years. In his survey, 44% of the 806 schools were departmentalized in one subject or more, with the most frequently departmentalized subjects being (1) music, (2) physical education, (3) art, (4) arithmetic (5) science, (6) reading, (7) social studies, (8) library, (9) English, (10) language arts.[18]

In December, 1964, Jarvis reported that completely self-contained classes in grades 4-6 had moved down to third on a list of most commonly used organizational plans. Only 12% of the 64 metropolitan school districts he surveyed expect one teacher to handle all instruction for his class. What is most common--in two-thirds of the schools--are self-contained classes assisted by special teachers, 44% of whom are music specialists, 20% physical education specialists, 14% art specialists, 7% foreign language, 5% reading, 4% arithmetic, and 2% speech, English, and science specialists.[19]

A 1961 survey by Baker of administrative problems in

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17. Glen Robinson, "Principals' Opinions about School Organization," National Elementary Principal, (November, 1961), pp. 40-41.

18. Roland E. Barnes, "A Survey of Status and Trends in Departmentalization in City Elementary Schools," Journal of Educational Research, (March, 1962), p. 292.

19. Oscar T. Jarvis, "The Door Opens in Self-contained Classrooms to Let in Specialists," Nation's Schools, (December, 1964), pp. 33-4.

physical education in public schools concluded that the majority of states did not meet the recommended standard of a qualified consultant in the elementary school: only 13 states had qualified consultants in at least 50% of their elementary schools.[20]

Shrader and Hallstrom indicated in 1964 that the physical education teacher is responsible for the instructional program in less than half of the 6,768 schools they surveyed (in all states except Hawaii and Alaska). The classroom teacher is responsible for the instruction in more than half of the schools, with indications that the smaller the school system, the more likely it is that there will be a physical education specialist in charge of the program, and, conversely, the larger the system, the more likely physical education will be the responsibility of the classroom teacher (exception: schools in rural towns of less than 5,000 population). The authors cited two similar surveys conducted within a twelve year period which indicate an accelerated trend away from the classroom teacher-responsibility type of program: In 1950 Troester reported that classroom teachers were responsible for teaching elementary (K-6) physical education in 80% of the nation's schools; Schneider's survey in 1959 indicated that the intermediate grade physical education program was the direct responsibility of the classroom teacher in 71% of the nation's schools; in their own 1962 study, the classroom teacher organizational pattern had slipped to approximately 58%.[21] (limited to the instruction of physical education)

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20. Gertrude M. Baker, "A Survey of the Administration of Physical Education in Public Schools of the United States," Research Quarterly, (December, 1952), pp. 632-6.

21. Robert Shrader and Thomas L. Hallstrom, "The Organizational Status of Intermediate Grades (4,5,6) Physical Education in the Elementary School," Physical Educator, (December, 1964), p. 161.

B. EFFECTS OF ORGANIZATIONAL PLANS UPON PUPIL LEARNING

While a great deal of effort has been expended to ascertain the status and trends in elementary school organization, the task of determining the effectiveness of departmental and non-departmental plans has neither been dealt with as abundantly nor as conclusively as the former. Among the earliest studies are:

(1) a 1913 survey which revealed that departmental organization succeeds with strong and fails with weak pupils.[1] (strong and weak, in this case, referring to ability in any given departmental subject matter)

(2) a 1923 study which concluded that pupils under the single teacher plan made higher achievement scores in grades five through eight than pupils who were departmentalized.[2]

(3) a 1930 study indicated that the departmentalized program was just as effective as the single teacher plan, but that other advantages accrued from the single teacher plan.[3]

Although a number of later investigations are available, it would be misleading to include them, because the authors failed to define the alternatives they were testing. No test is assumed to be relevant to the problem considered herein unless by definition or by analysis of the data, it was possible to ascertain implications for elementary physical education.

In 1960 Broadhead made a study of pupil adjustment in the Tulsa, Oklahoma, schools which have been organized as semi-departmental since 1926. In the Tulsa schools, a child

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1. Mary Dunn, "Should There Be Any Set Type of Elementary School Organization?" Elementary School Journal, (December, 1952) p. 202.

2. Albert H. Shuster and Wilson F. Wetzler, Leadership in Elementary School Administration and Supervision, p. 249.

3. Ibid.

receives a half-day homeroom instruction in the base subjects, reading, writing, arithmetic, spelling, language arts, and social studies; the remainder of the day is spent with teachers who have had specialized training in science, art, music, physical education, library science, and speech. The pupils he tested had been in this semi-departmental system since and including first grade to fifth grade. He reached the following conclusions:

> (1) The Tulsa semi-departmental fifth graders showed better adjustment as measured by the problems identified, than did the self-contained classroom fifth graders.
>
> (2) Since no evidence of adjustment inferior to that of the self-contained classroom norm group was found, the semi-departmentalized type of elementary school organization must not in itself promote poor adjustment in school children.[4]

His findings were later corroborated by Livingston, who reported better adjustment in pupils in a semi-departmentalized school, grades one through five, than in pupils in a self-contained classroom, grades one and two, then in semi-departmentalized classes, grades three through five.[5]

An interesting study was conducted by Rouse, who, with a prepared checklist of 137 curricular and teaching practices, observed departmentalized and non-departmentalized classrooms to what differences existed in practice. She found significant differences in only 14 of the137 practices; of these, 7 were found most frequently in the departmentalized schools, and 7 in the non-departmentalized schools.[6]

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4. Fred C. Broadhead, "Pupil Adjustment in the Semi-departmental School," Elementary School Journal, (April, 1960), pp. 385-90.

5. A. Hugh Livingston, "Does Departmental Organization Affect Children's Adjustment?" Elementary School Journal, (April, 1960), pp. 217-20.

6. Margaret Rouse, "A Comparison of Curricular Practices in Departmental and Nondepartmental Schools," Elementary School Journal, (September, 1946), pp. 34-42.

Basic research in the area of effective teaching of physical education in the elementary school is extremely limited. The following summaries of two studies are offered:

> Zimmerman administered the AAHPER Physical Fitness Tests to 2 groups of elementary school children: one group instructed in physical education by the classroom teacher; the other, by a special teacher of physical education. She reported that the girls with the special teacher were significantly better in 14 of the 35 events tested, and the boys with the special teacher were better in 20 of the 35 events. On the basis of these findings, she recommended that elementary schools should make every effort to provide special teachers of physical education.[7]

However, it should be noted that the "specialists" in her study are former classroom teachers who took over the teaching of physical education, and were not professionally trained physical educators.

> Ross tested the performance of 240 fifth and sixth grade boys and girls in the Rockford elementary schools. Half of the group were participants in a self-contained classroom; half were under the direct leadership of a physical education specialist for their daily period of physical education. The criteria in this study were the Iowa Brace, short potato race, 30-yard dash, and the standing broad jump. Her findings revealed that the boys and girls taught by the physical education specialist were better, but significantly better on the 30-yard dash ONLY. In both groups, the boys were better than the girls.
>
> In analysis of the findings, she reports the following items which may have influenced the findings:
>
> (a) All elementary physical education in Rockford is under a Supervisor of Physical Education and his Assistant Supervisor, who are on call at all times for the classroom teachers.
>
> (b) The specialist was in direct control of his group from grade four only.
>
> (c) The girls were superior in performance to the boys under the specialist in the short potato and the standing broad jump; however, the boys were superior to the girls under the non-specialist.[8]

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7. Helen Zimmerman, "Physical Performance of Children Taught by Special Teachers and by Classroom Teachers," Research Quarterly, (October, 1959), pp. 356-62.

8. Bertha M. Ross, "A Study of the Performance of Boys and Girls," Research Quarterly, (May, 1960), pp. 199-207.

An entirely different approach to the problem was undertaken by Donnelly. A checklist was given to 150 classroom teachers, none of whom had the aid of a physical education specialist as an integral part of the program. The questionnaire was based upon feelings only. The following summary (138 respondents) was reported:[9]

(1) 127 of the 138 felt they do have the responsibility of physical education.

(2) Though a majority want help from a specialist, they do not want the specialist to teach all of the time.

(3) A vast majority felt that recess was not enough for children, but the number drops considerably when asked about a daily period of physical education.

(4) The majority feel a need for specialist help on a regular basis.

(5) 2/3 expressed the need for some kind of curriculum guide for programs.

The Research Division of the NEA undertook a similar survey of 1,493 teachers, representing all public school teachers. The responses of the elementary teachers regarding physical exercise are given below:[10]

(1) Some persons believe children and youth today get too little exercise and are "soft" physically. Do you agree or disagree?

Agree--------59.3%

Disagree-----30.2%

Undecided---10.5%

(2) Do you think sufficient time is alloted to physical exercise during the school day for pupils in the school in which you teach?

Too much time---------- 2.9%

Too little time-------20.9%

Undecided---------- 2.5%

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9. Alice Donnelly, "Let's Ask the Classroom Teacher," Journal of Health, Physical Education, and Recreation, (November, 1958), p. 43.

10. reported in Journal of Health, Physical Education, and Recreation, (May, 1964), p. 69.

A recent report on teacher attitudes toward the self-contained classroom and semi-departmental types of elementary school organization stated in part: "There is no evidence that adjustment to several different teaching personalities is harmful to children; it could even be valuable." Of the teachers surveyed, 109 favored the self-contained classroom, 122 did not. Further analysis revealed the following data:

Kindergarten-Grade Two: 51 favored self-contained class
53 opposed self-contained class

Grades Three, Four: 35 favored self-contained class
40 opposed

Grades Five, Six: 17 favored self-contained class
37 opposed

Ackerland then offered a further breakdown of the teachers' attitudes, as they were related to the various subject matter areas in the elementary school:

Subject	No. of Responses	Like to teach	Dislike to teach	Neither like nor dislike
Reading	255	223	6	27
Science	248	136	37	75
Art	257	158	34	65
Music	245	128	69	58
Physical Education	256	126	60	70

Generally speaking, the teacher's experience in the various subject areas (in high school and college) did not influence significantly liking or disliking to teach the subject.[11]

And, again, to gain some background regarding the classroom teacher, the NEA Research Division reported in October, 1965, that at the elementary level, 35.1% of all teachers are 50 or more years old (compared with 17% at the secondary level), and, thus, over one-third of the elementary school teachers received their original teacher training 25 to 40 or more years ago. Further investigation of subsequent training to keep abreast of

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11. George Ackerland, "Report on Teacher Attitudes toward Self-Contained Classroom and Semi-Departmental Types of Elementary School Organization," Phi Delta Kappan, (April, 1959), pp. 283-5.

developments in education revealed that 15.1% of the elementary school teachers--most of them in the older group--do not have a Bachelor's Degree (an improvement over the 23.8% in 1961).[12]

Shane and Polychrones concluded, after sifting through recent research, that "departmentalization is widespread, that such organization per se is neither demonstrably helpful nor definitely harmful to children, and that while there may be a trend to the unit (self-contained) classroom, it is not a massive trend."[13]

It should be noted that these writers (Shane and Polychrones) counted physical education, art, and music specialist teachers as evidence of departmentalization in an elementary school.

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12. Research Division, NEA, "Status of Public-School Teachers, 1965," Research Bulletin, (October, 1965), pp. 67-71.

13. Lawrence C. Lobdell and William J. VanNess, "The Self-Contained Classroom in the Elementary School," Elementary School Journal, (January, 1963), p. 213.

CHAPTER THREE

A SURVEY OF PROFESSIONAL LITERATURE

Because research has not yet explored all facets of the problem, it seemed advisable to examine some of the opinions of educators who have spoken of the advantages and disadvantages of specialization on the elementary level. They are offered without comment, but will be under examination at the end of the chapter in Part C.

Who should teach physical education in the elementary school: the classroom teacher of a specialist in physical education?

A. The Classroom Teacher

> Lucille Hill: It is not any more unreasonable to expect the classroom teacher to be prepared in physical education activities than it is to expect him to be prepared to teach reading, arithmetic, social studies, or any other facet of the elementary school program. There has been, for too long, a separation between physical education and other areas of learning.[1]
>
> Staff of Department of Health, Physical Education, and Recreation, Southern California: The answer can be given both idealistically and realistically in these words--the classroom teacher. There is ample evidence through research to show that children of ages five through eleven learn more efficiently and effectively when a few adults, rather than several, give leadership within one day.[2]

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1. Lucille Hill, "Basic Issues," Journal of Health, Physical Education, and Recreation, (November, 1961), pp. 8-10.

2. Loc. Cit. (Author's note: Several writers made allusion to such evidence, without reference; this writer, however, was unable to locate the original source in basic research.)

Arthur Miller and Virginia Whitcomb: It is generally agreed that the classroom teacher in grades 1, 2, and 3 should teach physical education to her respective students because she understands the individual differences of the children, their interests, needs, and abilities. The nature of the curriculum in the lower grades lends itself to better correlation of physical education activities with other subjects and the knowledge and understanding to be gained by a classroom teacher's observations of her children at play and under circumstances other than with academic subjects, makes her the logical choice to teach physical education. In the upper grades (4, 5, and 6) a more highly specialized program of physical education, meeting the growing individual interests, needs, and skills of boys and girls, demands that the teacher be more highly trained and skilled in physical education.[3]

James Humphrey: (1) The contact that the classroom teacher has with the child gives this person an outstanding opportunity to understand the child as a growing organism.

(2) The classroom teacher is prepared to guide, uninterrupted, the process of total growth and development.

(3) The transition that the child must make from the family circle to one teacher creates a difficult enough adjustment for him, without having him adjust to more teachers.

(4) The classroom teacher is in a better position to carry on a child-centered procedure as against the possibility that the specialist may be more concerned with subject matter only.

(5) The classroom teacher is in a better position to integrate physical education with the other subject matter areas of the curriculum because she knows precisely the status of her class in these areas.[4]

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3. Arthur G. Miller and Virginia Whitcomb, Physical Education in the Elementary School Curriculum, p. 15.

4. James Humphrey, Elementary School Physical Education, p. 35.

Steffi K. Jones, first grade teacher: To set up a program of physical education is not difficult. No training in physical education is necessary. All that is needed is the will to do and enthusiasm, with the gumption to see it through.[5]

Helen Manley: He (the classroom teacher) knows the children and the total curriculum and thus can weave the health and physical education activities into the daily program. He knows the child who does not want to play because he is really ill or because he is just insecure. He understands the one who needs more or fewer opportunities for leadership. He can see vividly the aftermaths of over-exertion in physical education the hour before, and can spend sufficient time in his room to evaluate with the child his experiences in health and physical education.[6]

Strong Hinman: Education has felt keenly the disintegrating forces of specialization and departmentalization, especially in the elementary schools.....When educators later began to think in terms of developing pupils as individuals who were to fit into a unified society and when education began to move in the direction of integration, the field of the special itinerant teacher of special subjects became limited. As progress was made toward a unified education, our administrators began to expect the classroom teacher to assume more responsibility for the so-called special subjects. Teacher-training institutions turned out teachers who could do a thorough job in all branches of education. The specialist became less and less needed, until today we find the classroom teacher taking over the teaching of such work as music, art, penmanship, and physical education....It is no longer sound education to speak of fundamental and special subjects.[7]

E. Benton Salt and Grace Fox: In the elementary school the classroom teacher should be responsible for organizing and conducting this program for his particular group.[8]

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5. Steffi K. Jones, "It's Time for a Change in Physical Education," Instructor, (October, 1957), p. 21.

6. Helen Manley, Children in Focus, American Association of Health, Physical Education, and Recreation, 1954 Yearbook, pp. 235-6.

7. Strong Hinman, Physical Education in the Elementary Grades, pp. 49-50.

8. E. Benton Salt and Grace Fox, Teaching Physical Education in the Elementary School, p. 14.

Marion Alice Sanborn and Betty G. Hartman: (1) When elementary school physical education is taught by the classroom teacher, more wholesome relationships between the teacher and the pupils, among the pupils, and between the teacher and the parents, can be developed. When the teacher plays with her students, she gets to know them a little better and they in turn have an opportunity to see her in a more relaxed situation. Because of this shift in relationships, the play period can easily become a laboratory for much that the students are learning in the classroom.

(2) Because the classroom teacher knows her pupils so well, she is less apt to damage their physical or mental health through play activities and is more apt to help the child. She has the family history, the child's health history, the results of mental and health tests.

(3) When the classroom teacher assumes the responsibility for physical education, her class is freed from a scheduled "recess" or physical education period. The class is no longer bound to go at a specified time, nor must they go when other classes are playing and crowding facilities. A class can have physical education when it is more convenient, most helpful, and can stay as long as it is desirable.

(4) Financially, it is easier to have the classroom teacher teach physical education.

(5) Low organization activities do not call for the services of a specialist. Physical education on the elementary school level consists mainly of activities of low organization which can be taught by any teacher.[9]

Harlan A. Hagman: Good teaching should be given the opportunity to become effective. This is denied in the rapid change of a departmental program.....Learning is a continuous process that should not be subject to the artificial controls of a program of time allotments....The departmental plan is an attempt to imitate colleges and universities, and has no psychological foundation to support its use (in the elementary school).[10]

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9. Marion Alice Sanborn and Betty G. Hartman, Issues in Physical Education, p. 185.

10. Harlan A. Hagman, "Shall We Departmentalize?" Nation's Schools, (July, 1941), p. 30.

John S. Diekhoff: General education is appropriate to the generality of mankind. It is unspecialized...education relevant to our common humanity is general, not specialized. It does not aim at encyclopedic knowledge nor at universal expertness, but neither does it aim at a specialist's skills. Amateur proficiency, not professional expertness, is the realistic aim.[11]

Lawrence C. Lobdell: 'A basic premise underlying the science program is that it should be in harmony with the total program of education. This implies that elementary science is an integral part of the fabric which includes social studies, language arts, music, health and physical education.' (quote from scientist Glen Blough) If this premise applies to science, it also applies to every subject area and every skills area. Each has its important contribution to make to the elementary school program. Reinforcement of learning often occurs when a concept is applied to areas other than that involved in the teaching of the moment. It is difficult to see how this kind of reinforcement, this mutual enrichment, this integrative process, can take place as effectively outside the self-contained classroom as in.[12]

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11. John S. Diekhoff, "The Last Encyclopedists," Saturday Review of Literature, (September 15, 1962), pp. 52-3.

12. Lawrence C. Lobdell and William J. VanNess, The Self-Contained Classroom in the Elementary School," Elementary School Journal, (January, 1963), p. 213.

B. The Physical Education Specialist

The Fund for the Advancement of Education: The cherished ideal of the teacher serving the mysteries of the teaching process lies at the heart of our views on education, and influence the latest educational reforms designed to help the teacher carry out his mission. Those who insist on maintaining the status quo of school organization--the self-contained classroom, the egg-crate schoolhouse, the hallowed ratios--are clinging to external forms rather than preserving the essence of the teacher-pupil relationship.[13]

Robert J. Nareau: 'We didn't have any physical education today because some of the kids were talking during arithmetic and the teacher made us stay in the room'--happens all too frequently. Rather than regarding physical education a regular and important part of the curriculum, it is looked upon as a reward for acceptable behavior.... The first and most important criterion of physical education must be to educate--if it doesn't, it has no place in the program....Schools should be encouraged to hire regularly qualified teachers of physical education.[14]

James H. Humphrey: (1) There is a limit to how many competencies which the classroom teacher should be expected to acquire.

(2) Without the help of the specialist, the classroom teacher might be 'spread too thin' and thus neglect an important area of the child's total development.

(3) While classroom teachers may now be receiving better professional preparation than in the past, at the same time, there are many more activities of an extra-class nature--such as collecting for various funds and the like--that add to the burden of the classroom teacher.

(4) All classroom teachers are not likely to have an interest in teaching physical education for various reasons.[15]

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13. The Fund for the Advancement of Learning, Decade of Experiment, p. 47.

14. Robert J. Nareau, "A School Administrator Looks at Physical Education," School Activities, (September, 1956), pp. 9-12.

15. James H. Humphrey, Elementary School Physical Education, p. 35.

Gwendolyn Drew: The question really is: in our schools, how can we teach the love of motor activity at the behavior level in order to counteract the love of inactivity brought about by the excellent teaching techniques of our automated society? The answer is one which challenges us to improve the skills of our specialists! Are you willing to trust this important part of our total plan of education to any person but the very best? This is an era of team teaching. A specialist who works directly with children in physical education belongs on the team.[16]

Erna Hinkel: Yes, the special teacher should teach in the classroom where she can be a real inspiration to many. She has the knowledge and the know-how. She has a store of devices to use in teaching the facts of her subject... The special teacher, alert in her field, can plan the work for each section based upon its potential and the particular unit the class is studying. Her goals can be adapted to them if she personally meets the class.[17]

Jaques Barzun: Who then 'liquidates ignorance'? Not the teacher who knows each 'age group', all its 'reactions' and 'social urges' and 'growth factors' ahead of time, but cannot give clear assignments, instructions, or answers.. Vagueness is bound to prevail when the aim of the school is no longer instruction in subjects, but education in attitudes to meet the needs of life.[18]

Jere Faria: Modern physical education is guilty of putting the cart before the horse....specialized physical educators are found in high schools and colleges, but not often in the elementary schools. Obvious reasons support the contention that youngsters should learn basic skills in the lower grades. We are (by example) teaching our youth algebra before they have had fundamental arithmetic.[19]

Winifred Van Hagan: In recent years another phrase, the total situation, has come into use in educational circles. This concept implies that behavior is an expression of the individual in relation to all the forces of the environment that play upon him. In order to understand the child's behavior, it is necessary to apply the concept of the total

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16. Gwendolyn Drew, "Basic Issues," op. cit., p. 8.
17. Erna Hinkel, "Sound Off," Instructor, (October, 1960), pp. 8-9.
18. Jaques Barzun, "Of Major Interest," Journal of Health, Physical Education, and Recreation, (May-June, 1958), p. 49.

situation to all the particular experiences that children have.....We teach the whole child and it is the whole child that learns. But we do not teach the whole child in general. We teach particular skills, we arouse particular interests, and we secure particular responses. It is the particular that has meaning for the learner.... The concept of the inter-relationship of all aspects of the individual is essential in education, but it should never lead to the neglect of the particular in contemplation of the general good.[20]

Jackson Sharman: The program has come to include (in addition to competitive sports and gymnastics) recreational games, dancing, outings, parties, water sports, and many similar activities....The instructional function relating to these activities has a much greater scope than those of the earlier programs, and demands that the teacher have specific competence in meeting a variety of educational obligations.[21]

Jesse F. Williams: Educators are not in agreement concerning the purpose of education in the early years of school. They should step aside and permit those who do know to determine the programs. The purpose is the development of the child and the physical basis must come first.[22]

Alfred North Whitehead: We enunciate two educational commandments, 'Do not teach too many subjects,' and again, 'What you teach, teach thoroughly.' The result of teaching small parts of a large number of subjects is the passive reception of disconnected ideas, not illumined by any spark of vitality.[23]

Edith Miller: ....when the specialist comes into the room, he personifies the subject. You're known as Mr. Science or Miss Music, and both children and teacher are keyed to respond to you.[24]

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20. Winifred Van Hagan and others, Physical Education in the Elementary School, p. 23 and p. 35.
21. Jackson Sharman, Modern Principles of Physical Education, p. 3.
22. Elwood Davis and John Lawther, Successful Teaching in Physical Education, p. 315.
23. Alfred North Whitehead, The Aims of Education, p. 14.
24. Edith Miller, "The Specialist: Threat or Challenge?, The National Elementary Principal, (January, 1963), p. 26.

Marion Alice Sanborn: (1) Physical education is a special subject requiring specific preparation. Elementary school teachers are not prepared to teach physical education.

(2) The literature of the field is geared to the specialist in physical education and is of little value to the uninitiated.

(3) The classroom teacher is not equipped to deal with exceptional children. She is, of course, qualified to teach exceptional children in the classroom, but the exceptional children on the playground and in the gymnasium are different and require different techniques, as well as a vast store of knowledge.[25]

Richard O. Anderson: Other things being equal, the deeper the teacher's understanding of his subject, the greater the likelihood of excellent instruction. Some teachers who have mastered an area of knowledge may be able to lead their pupils to a comprehension of the basic ideas of the discipline. It is difficult to believe a teacher with only a superficial understanding of an area of knowledge could achieve such results. This is the key premise of the departmental school.....Some educators insist that it is of overriding importance that the teacher know the child. 'Knowing the child' is a concept that has several levels of meaning....But perhaps the most significant sense of knowing the child is understanding him in relation to his educational level. It is at this important level that the competent specialist teacher has a big advantage over his generalist counterpart.....To the teacher who must instruct children in an area in which he is poorly prepared, motivation is extrinsic to the learning task itself. ...If integration is important, the specialist teacher seems to be in the best position to guide his pupils in an examination of the extensions and applications of his field. He can help pupils understand his specialty in the light of broader issues, and he can lead pupils in a consideration of problems that span several disciplines.[26]

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25. Marion Alice Sanborn and Betty G. Hartman, Issues in Physical Education, p. 184.

26. Richard O. Anderson, "The Case for Teacher Specialization in the Elementary School," Elementary School Journal, (February, 1962), pp. 253-6-.

C. A Semantic Analysis of Related Literature

In making an empirical judgment concerning an educational problem, one can turn to basic research for the facts upon which to base a decision. In this case, however, basic research is found wanting. The next source toward which one can look for guidance is that point of view upon which the experts agree. Here, again, the experts (writers in professional publications) merely confound the issue by the wide divergence of opinion among them. In such an impasse, the tools of semantics may well serve to sort out the fallacies which have lent confusion to the thinking and discussion. Stuart Chase suggests the following names for types of fallacies which are common to our everyday thinking.[27] In recognizing them as fallacies, we are well on our way toward gaining a better understanding of the case in hand.

1. The Thin-entering Wedge is at home in all educational problems. Its users start at the fact level, but do not stay there. They ride a curve into the future, predicting large roomy results on small scraps of fact. It is easy to see the persuasiveness of this over-generalization: by pushing one's case to the limit, just short of an obvious reductio ad absurdum, one forces the opposition into a weaker position.

2. The post hoc, ergo propter hoc fallacy, which translates "after this, therefore because of this," helps us to fill an explanatory vacuum. We do not like uncertainty; any reason, even a flimsy one, seems better than no reason at all. Scientists increasingly think in terms of process, rather than single cause and effect. A given effect may be the result of many causes, and in turn produces still further effects.

3. The Black or White fallacy generously allows that every question has two sides and that we must listen to both

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27. The semantic tools included in Part C were selected from mimeographed materials and class notes.

sides. But the big issues today are no longer merely black or white, if, indeed, they ever were. They have many sides, and we must allow for shades of gray. Classical logicians, like debaters, like things open or shut, good or bad, right or wrong. This may give them the mental satisfaction of a tidy solution on paper, but it does not help them understand their world. The front page of the daily newspaper (and, unfortunately, even the professional journals) give us much homework in finding the shades of gray in a two-valued approach.

4. The fallacy of Multiple Questions combines two or more questions into one and demands a single answer. This is a very large class of questions, and long, angry controversies can be solved if both sides can be brought to understand that such questions have many answers, but no correct ones. An answer is dependent upon an either-or situation involving value judgments or definitions given by the writer to the terms he uses.

5. The fallacy of Figures Prove relies on the impressiveness of numbers and decimal places--let the facts fall where they may! The difference between 55 and 38 is one thing; the difference between 55% and 38% is an entirely different problem. 55% of what? 38% of what? It is not enough that a writer draw his conclusions from the truth and nothing but the truth; it must also be the whole truth.

6. The Guilt by Association fallacy arises when two unlike things are equated and the identification is spurious. It also equated unlike entities on the basis of a simple common trait. The difficulty in this verbal no-man's land is in keeping our eyes on specific acts.

7. The fallacy of ad populum attempts to win an argument by an appeal to the crowd, the mass, the mob, rather than by reason. This appeal, filled with vague uses of "they" is a device to bypass independent thinking. The sound of symbols triggers the mind to reach well-worn conclusions--while our chief purpose is to reach a new conclusion.

CHAPTER IV

A STUDY OF THE PERFORMANCE OF BOYS AND GIRLS, GRADES ONE THROUGH THREE, TAUGHT BY THE SPECIALIST AND THE NONSPECIALIST

A. PURPOSE

The purpose of this study is to compare the performance scores on certain selected measures of first, second, and third grade boys and girls receiving physical education instruction from a physical education specialist, with the performance scores on the same measures of first, second, and third grade boys and girls instructed in physical education by a non-specialist, the classroom teacher.

B. PROCEDURE

Selection of sample. The city schools of Shelbyville, Illinois, were selected as the non-specialist schools. There are three elementary schools, each having a daily thirty-minute period of physical education, entirely under the direction of the classroom teacher. For comparison, classes were selected from the Robert B. Buzzard Laboratory School in Charleston, Illinois, where a trained physical education specialist is directly responsible for the daily physical education instruction.

Tests. Three tests were selected for this investigation:

(1) Sit and Reach Test (A measure of back and hip joint flexibility, and elasticity of the hamstring muscles[1]) A stall bar bench was placed on its side, with legs touching the wall. Two measuring sticks were fastened to the stool with zero marks even with the seat of the stool and one-inch ends butted together. Subjects sat with feet against the seat of the stool, stretched forward with both hands, knees straight, touching as far forward on the measuring stick as possible. Subject's score was

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1. M. Gladys Scott and Esther French, Evaluation in Physical Education, 1950 Edition, p. 184.

recorded to the nearest half-inch, measuring from the tip of the middle finger nearest the body--plus inches beyond the zero mark, minus inches on the near side. The best of three trials was used.[2]

(2) Bent Arm Hang (A measure of arm and shoulder girdle strength[3]) A doorway bar was adjusted high enough that the subject's feet would not touch the floor, even with full extension. The subject grasps the bar with both hands, shoulder width apart and palms away from the face. The arms are flexed firmly against the body, the chin is well above the bar, and the body hangs straight and unsupported, except for the hands. This position is held as long as possible, and time is counted to full extension of the arms.[4]

(3) Shuttle Run (A measure of agility[5]) Five yards from the starting line, a wood block (2" x 2" x 4") was placed in a 15" square marked on the floor. Ten yards from the starting line (and five yards beyond the first square) another wood block was placed in a similar square. The subject stands in an area three feet square, immediately behind the starting line. On the signal, "Ready? Go!" he runs to the first wood block and returns it to the starting area, then retrieves the second wood block. The blocks must be placed, not dropped or thrown, within the starting area. The score recorded is the amount of time between the starting signal and the instant the subject crosses the starting line with the second block.[6]

The author administered all of the tests in the non-specialist (experimental) groups. Prior to these tests, three

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2. A. Hugh Livingston and Helen Corrubia, Percentile Norms for Selected Tests of Physical Fitness for Boys and Girls in the Elementary Grades, p. 7.
3. M. Gladys Scott and Esther French, Measurement and Evaluation in Physical Education, 1959 Edition, pp. 297-98.
4. Ibid.
5. Scott and French, Evaluation in Physical Education, p. 181.
6. Adapted from AAHPER Physical Fitness Test.

days were spent with each group, teaching games and self-testing activities, in order to acquaint the children with the author, her voice, her directions, etc. In the control group, the physical education teacher administered the tests to her classes. All tests were administered within a three week period, February 14 to March 8, 1962.

C. STATISTICAL TREATMENT

The mean and standard deviation was computed for each test at each grade level for all sixteen experimental groups and three control groups. The mean and standard deviation of each of the experimental groups was then compared with its counterpart in the control group in order to determine any statistically significant difference between the groups. Fisher's formula[7] (for tests of significance for small uncorrelated samples) was used:

$$t = \frac{M_1 - M_2}{\sqrt{\left(\frac{N_1\sigma_1^2 + N_2\sigma_2^2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 N_2}\right)}}$$

The resulting t was then looked up on Fisher's Table of t opposite d.f. = $N_1 + N_2 - 2$ (d.f. = degrees of freedom) to determine the value of t or the level of confidence. The level of confidence was then expressed as a per cent and interpreted as follows:

(1) The results are said to be significant if the conclusion that they are would be erroneous in 1% or less of the cases.

(2) The results may be significant, but further observations are necessary (that is, we suspend judgment) if the conclusion that the results are significant would be wrong in 5% or less, but more than 1% of the cases.

(3) The results are not significant if the conclusion that they are significant would be in error in more than 5% of the cases.[8]

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7. G. Milton Smith, A Simplified Guide to Statistics, Third Edition, pp. 88-90.

8. Palmer O. Johnson, Statistical Methods in Research, p. 32.

D. ANALYSIS OF t VALUES

In all, sixteen experimental (non-specialist) groups were compared statistically with three control (specialist) groups in their performance on three tests, for a total of 48 tests. Of these, 31 groups were significantly lower than the control groups at the 1% level of confidence; 2 groups were significantly lower at the 2% and 2.8% levels of confidence; 1 group was lower at the 3% level of confidence; 2 groups were lower at the 5% level of confidence; and there was no significant difference in 12 groups.

Levels of confidence, expressed as per cents, used in this analysis are interpreted by the author as <u>chances in 100</u> that the difference observed seems to belong to the population defined by the hypothesis. At the 1% level of confidence, there is one chance in 100 that the two groups were selected from the same parent population; i.e., that the difference is so great that there is only 1 chance in 100 it could be attributed solely to sampling error and, consequently, that the experimental factor had an effect. Other levels of confidence tabulated in the analysis and their equivalence are:

2% = 1.6 chances in 100
2.8% = 2.8 chances in 100
3.6% = 3.6 chances in 100
5% = 5 chances in 100

Bent Arm Hang

(a) 13 classes significantly below Control Group at the 1% level of confidence.
1 approaching the 5% level of confidence.
2 NOT significantly different.

(b) The greatest difference was found in Grade Three, then in Grade One.

(c) Two classes were below the Control Group, but not significantly. Of these, one group (Grade Two E) is in a school with four horizontal ladders on the playground, and the classroom teacher recently completed a physical education class for elementary teachers at Eastern. The mean of the other group (Grade Two D) was possibly affected by its make-up: 16 boys and 5 girls.

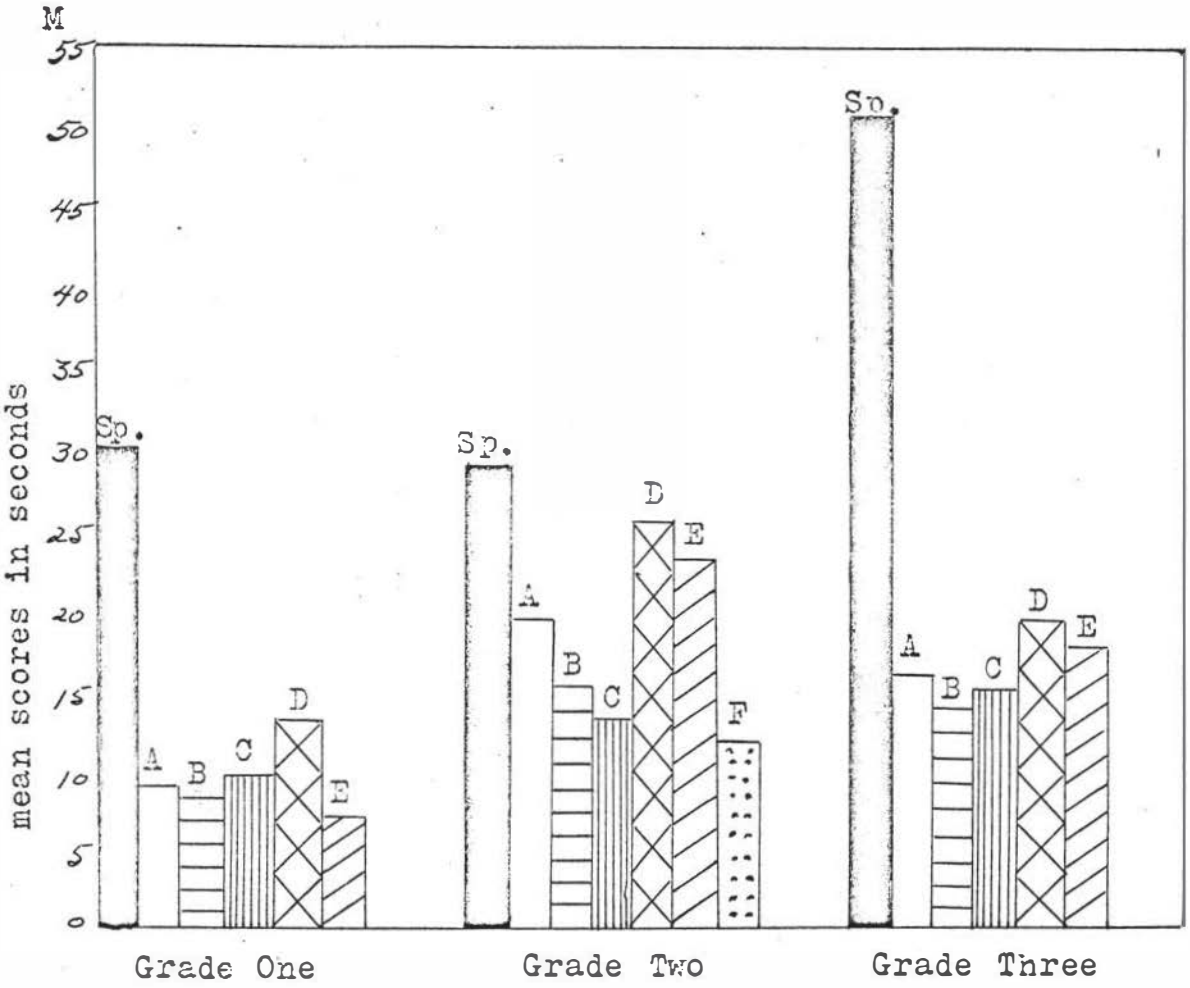


Figure 1.--Comparison of Means for all groups on the Bent Arm Hang.

Shuttle Run

(a) Of the 16 experimental groups, 14 were significantly lower than the Control Group at the 1% level of confidence.

1 class (Grade One A) approached the 5% level of confidence.

(b) Only 1 class was not significantly below the Control Group in the Shuttle Run. This classroom teacher recently came from the Decatur School System, with its well-supervised physical education program.

(c) The greatest difference in all grades was found in the school which has no indoor facilities for play, but has large, wide-open areas for long distance running rather than stopping, changing direction, etc.

(d) The graphic representation of Means below (Fig. 2) is misleading in that the difference between scores on each test is not emphasized. Rather, the Mean Scores were graphed in this way in order to emphasize the improvement (or deterioriation) in speed and agility from Grade One to Grade Three.

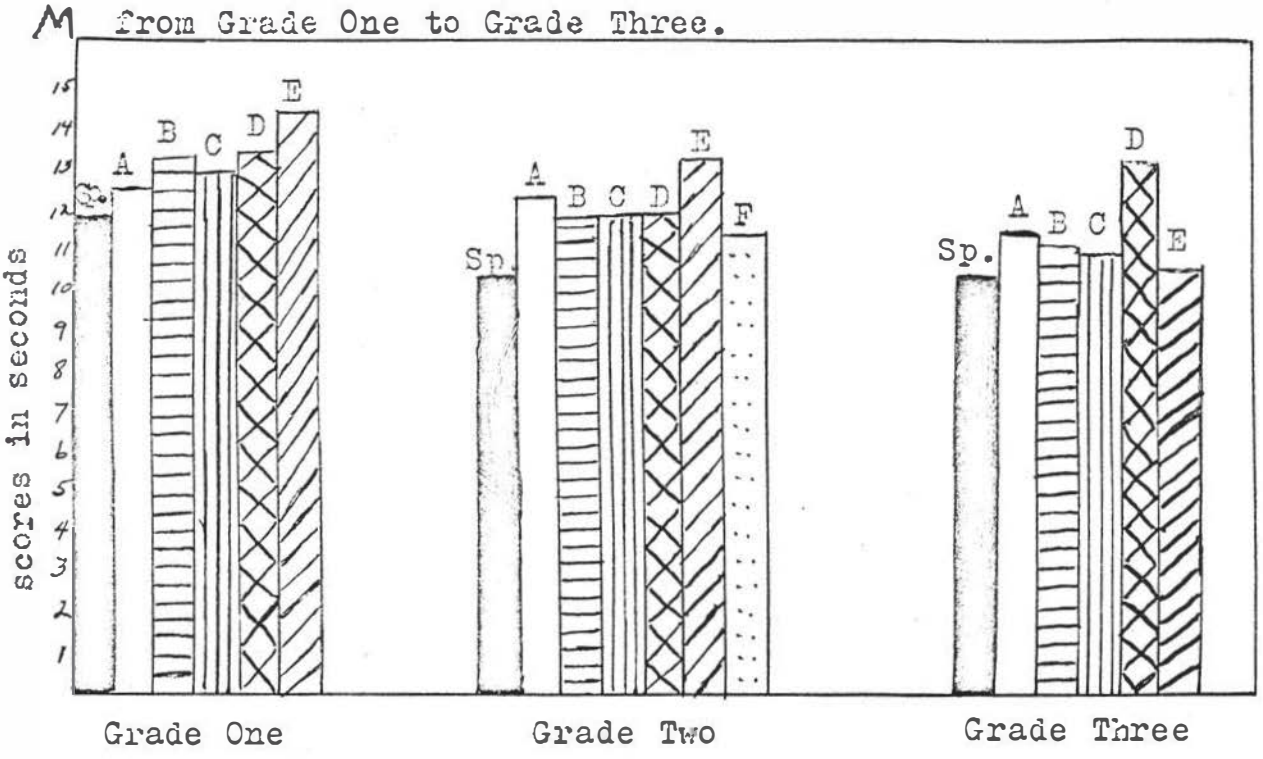


Figure 2.--Comparison of Means for all groups in the Shuttle Run.

Sit and Reach

(a) 4 significantly below at the 1% level of confidence.
2 significant at the 2% level of confidence.
1 significant at the 3.6% level of confidence.
2 below at the 5% level of confidence.
6 below, but not significantly.
1 class above the Control Group, but not significantly.

(b) Degrees of significant difference increase with grade levels, so that the greatest difference was found in third grade groups.

(c) Scores in the Control Groups ranged from 0 to +6.5; in the Experimental Groups, scores ranged from -3 to +7. With the exception of Grade Two F, each of the experimental groups had from 2 to 7 minus scores.

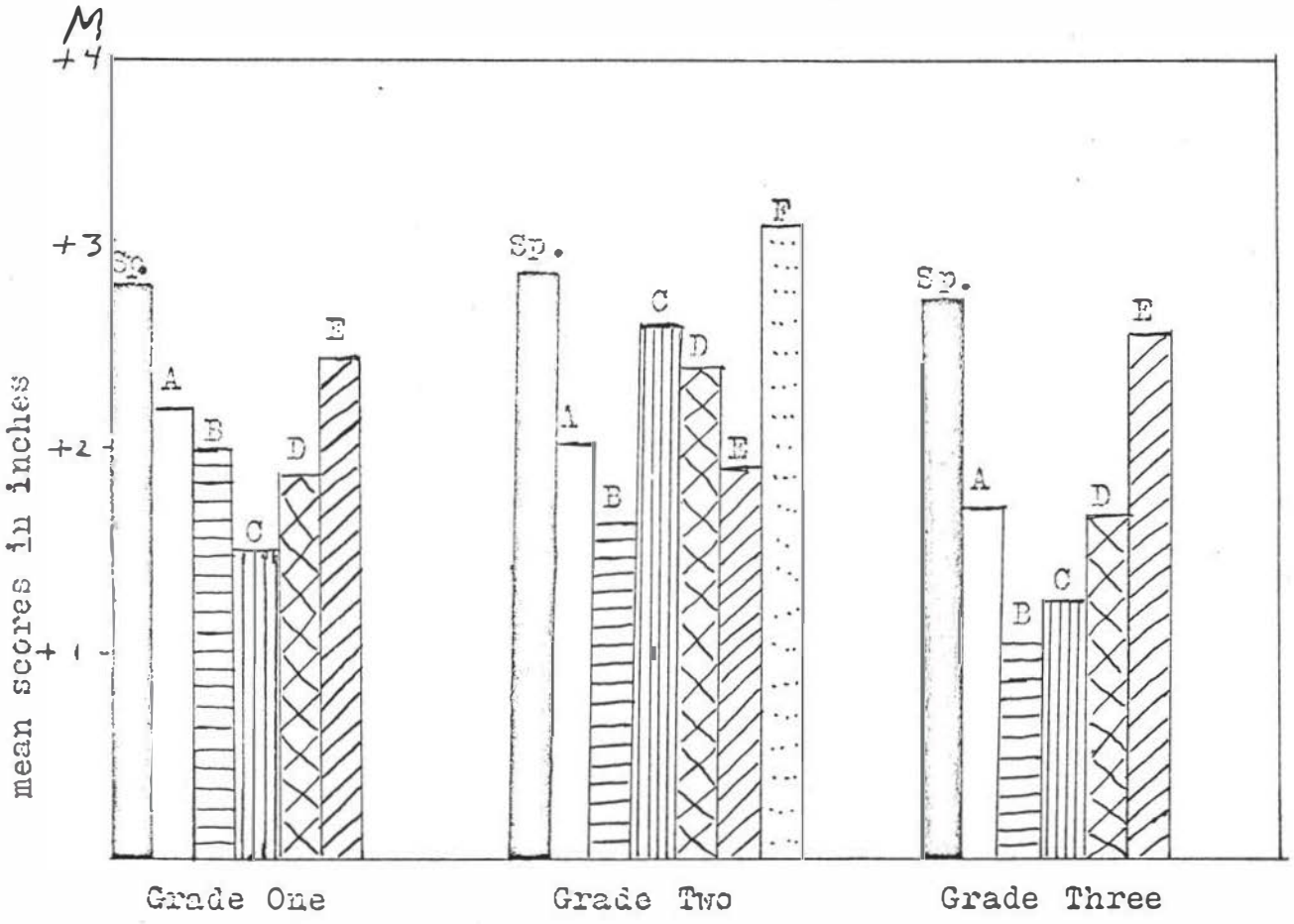


Figure 3.--Comparison of Means for all groups in the Sit and Reach.

Grade One

(1) Bent Arm Hang: ALL significant at better than the 1% level of confidence (between .006 and .00006 chances in 100 for the t's in Table 1.
There is a marked similarity in the means and in the histograms of frequency distribution in all of the experimental groups, Table 1.

(2) Shuttle Run: 4 groups significantly lower at better than the 1% level of confidence.
Grade One A, no significant difference.
See Table 2.

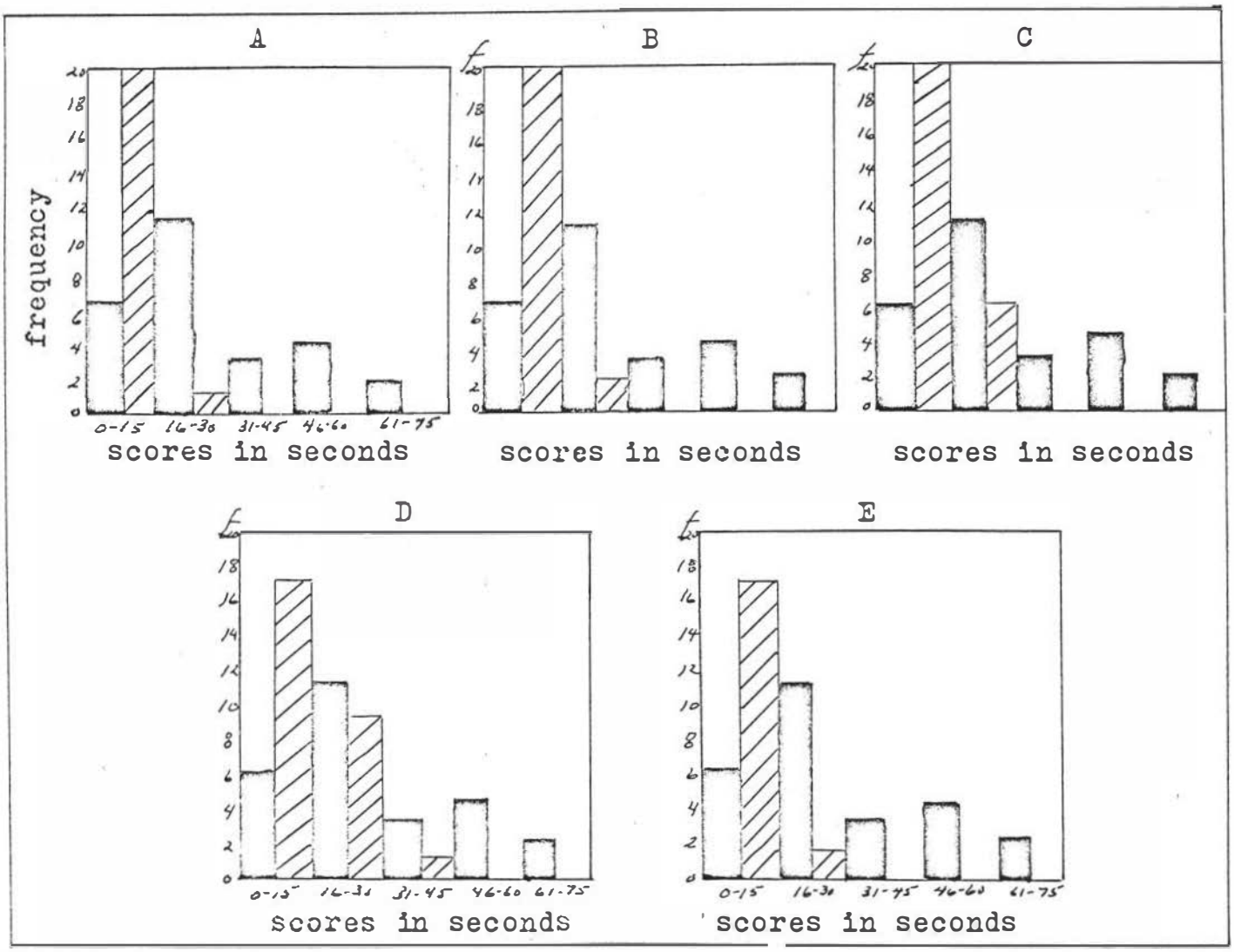
(3) Sit and Reach: 1 significantly lower at the 1% level of confidence. (Grade One C, Table 3)
1 lower at the 5% level.
3 groups below, but the difference is not significant. This is the second test in which there was no significant difference between Grade One A and the Control Group.

TABLE 1

BENT ARM HANG, GRADE ONE

	N	Mean	S. D.	t	Level of significance
Control Group (Spec.)	27	29.78	18.7		
Grade One A (Non-sp.)	23	9.	3.09	5.18	1%
Grade One B (Non-sp.)	26	7.87	4.83	5.78	1%
Grade One C (Non-sp.)	29	9.4	6.57	5.4	1%
Grade One D (Non-sp.)	27	12.53	7.82	5.088	1%
Grade One E (Non-sp.)	18	7.01	2.91	5.199	1%

Figure 4.--Histograms of Bent Arm Hang, Grade One



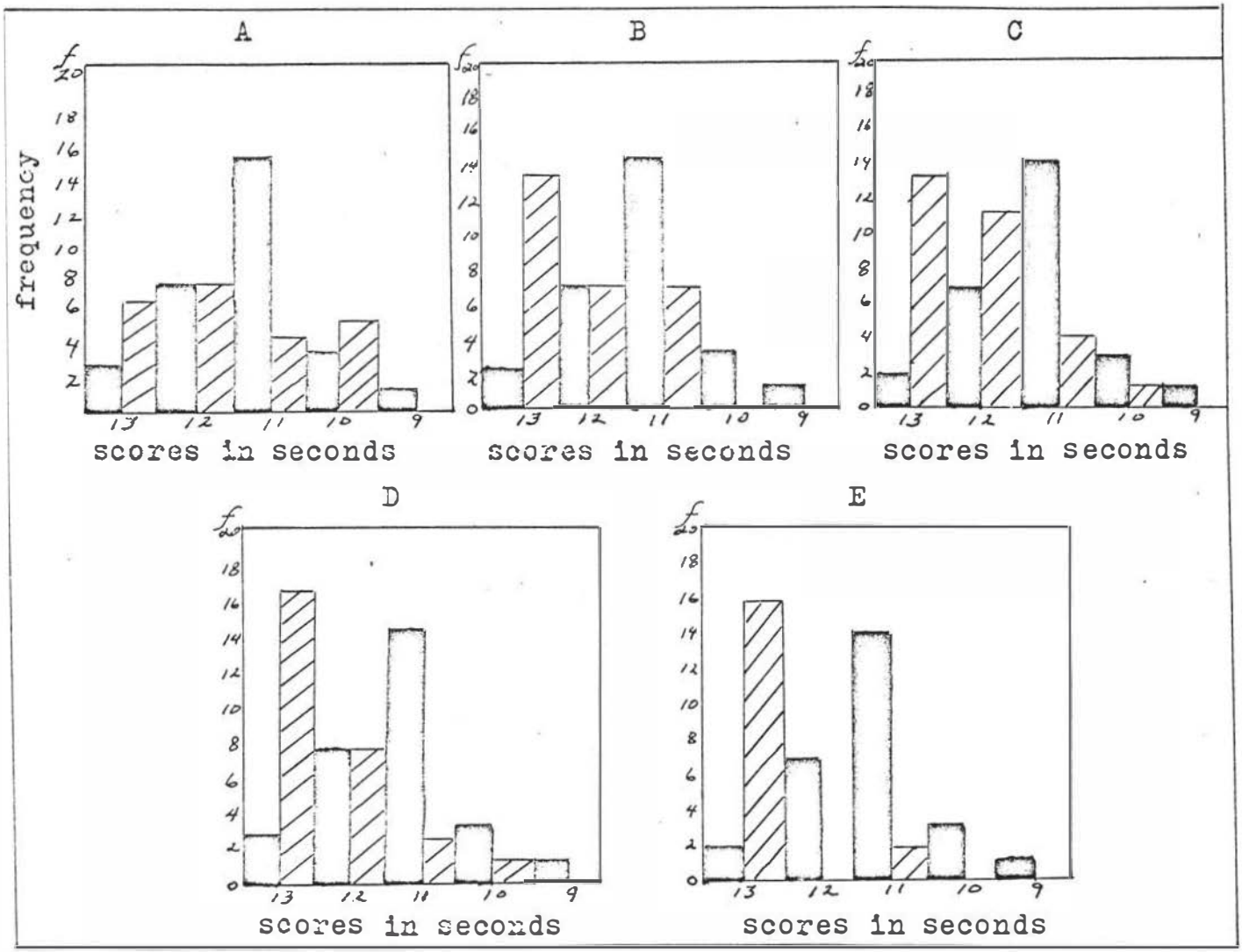
Key: Solid bar = Control Group
Striped bar = Experimental Group (letter above each histogram indicates the group on Table 1)

TABLE 2

SHUTTLE RUN, GRADE ONE

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	27	11.7	.96		
Grade One A (Non-sp.)	22	12.16	1.12	1.51	
Grade One B (Non-sp.)	26	13.01	1.25	4.3	1%
Grade One C (Non-sp.)	29	12.9	1.07	4.3	1%
Grade One D (Non-sp.)	26	13.05	.93	5.2	1%
Grade One E (Non-sp.)	18	14.3	.95	8.72	1%

Figure 5.--Histograms of Shuttle Run, Grade One



Key: Solid bar = Control Group
Striped bar = Experimental Group (Letter above each histogram indicates the group on Table 2)

TABLE 3

SIT AND REACH, GRADE ONE

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	26	2.83	1.54		
Grade One A (Non-sp,)	21	2.22	1.78	1.2	
Grade One B (Non-sp.)	27	2.02	1.77	1.77	
Grade One C (Non-sp.)	29	1.5	1.96	2.7	1%
Grade One D (Non-sp.)	27	1.9	1.76	2.	5%
Grade One E (Non-sp.)	18	2.48	1.48	.74	

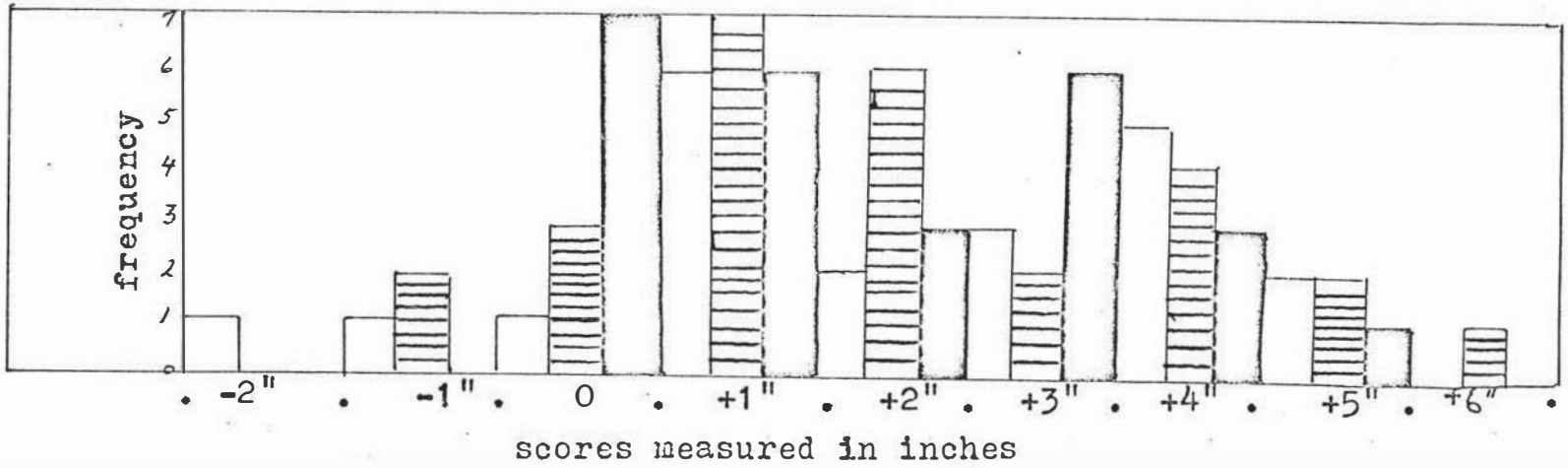


Figure 6.--Histogram of Sit and Reach of Control Group (solid bar) Grade One A (clear bar) and Grade One B (Horizontal lined bar).

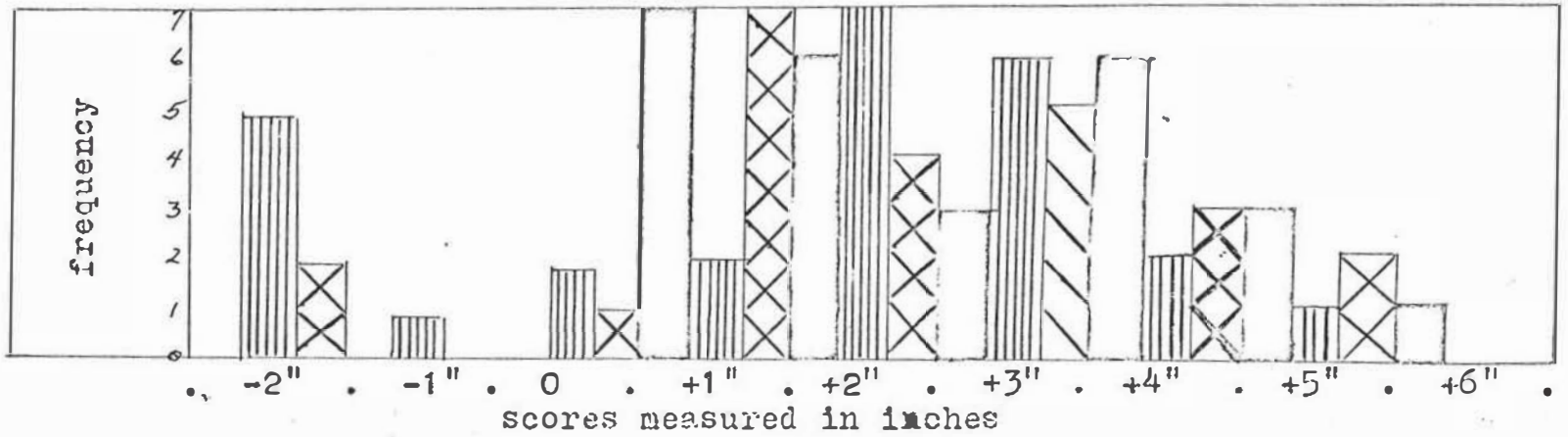


Figure 7.--Histogram of Sit and Reach of Control Group (solid bar), Grade One C (vertical lines), and Grade One D (x's).

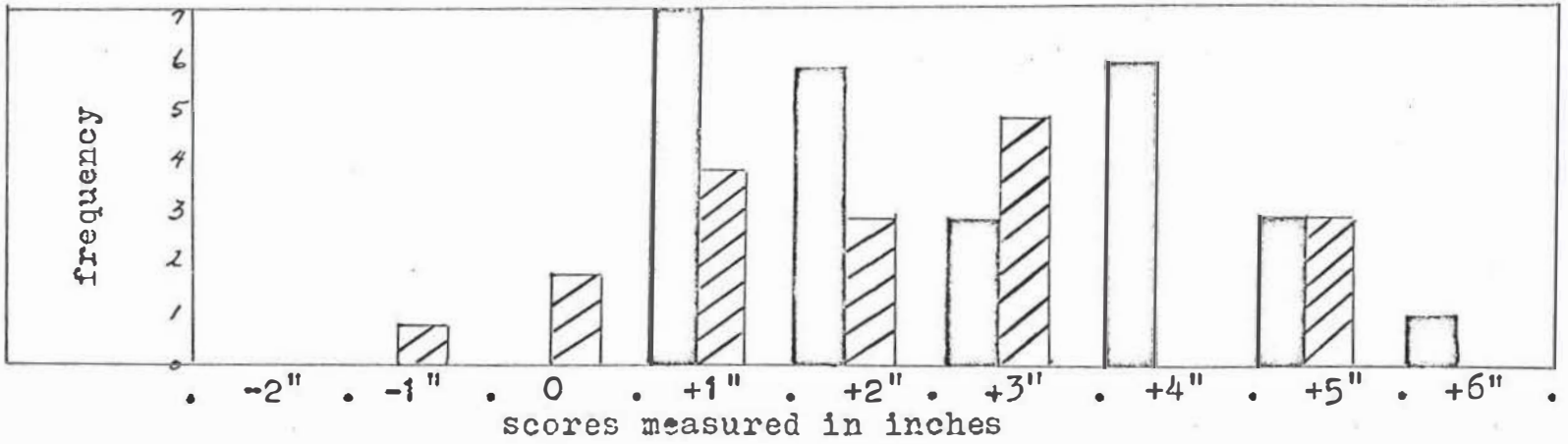


Figure 8.--Histogram of Sit and Reach of Control Group (solid bar) and Grade One E (diagonal lines).

Grade Two

(1) Bent Arm Hang: 3 significantly lower at the 1% level of confidence.
1 group, Grade Two A, approaching the 5% level of confidence.
2 NOT significantly lower (Table 4).

(2) Shuttle Run: ALL significant at the 1% level of confidence or better. (Table 5)
This is the only test of the three on which Grades Two D and E scored lower at a significant level. (Grade Two E, 5% level, on the Sit and Reach, Table 6.)

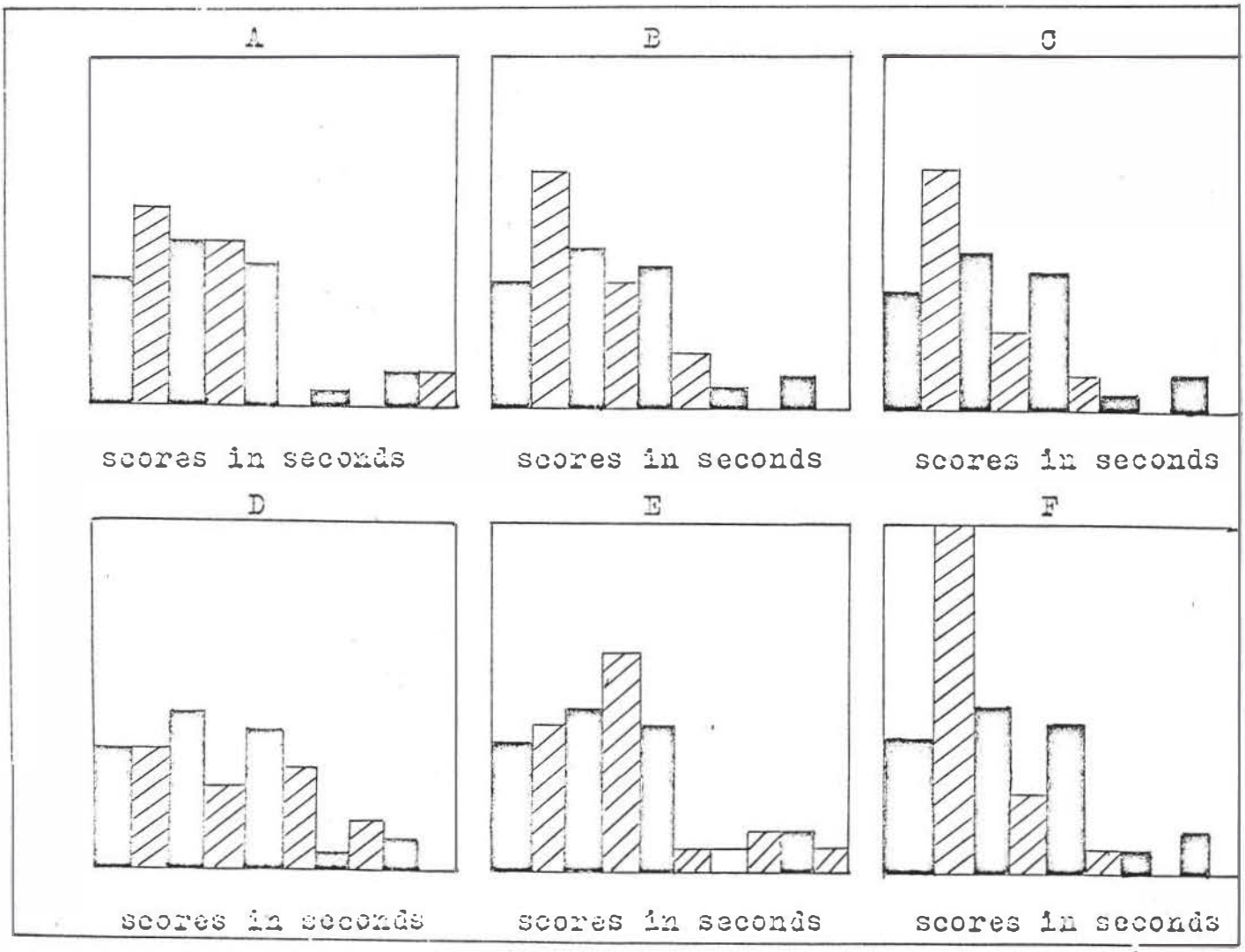
(3) Sit and Reach: 1 lower at the 1% level of confidence.
1 lower at the 2% level.
1 lower at the 5% level.
2 lower, but not significantly.
1 higher (3.18 to 2.89, Table 6), but the difference was not significant.

TABLE 4

BENT ARM HANG, GRADE TWO

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	28	28.4	18.6		
Grade Two A (Non-sp.)	22	19.04	17.5	1.767	
Grade Two B (Non-sp.)	23	15.83	9.75	2.87	1%
Grade Two C (Non-sp.)	21	13.28	9.48	3.32	1%
Grade Two D (Non-sp.)	21	25.3	16.6	.586	
Grade Two E (Non-sp.)	24	23.46	17.6	.95	
Grade Two F (Non-sp.)	26	13.	7.	3.898	1%

Figure 9.--Histograms of Bent Arm Hang, Grade Two



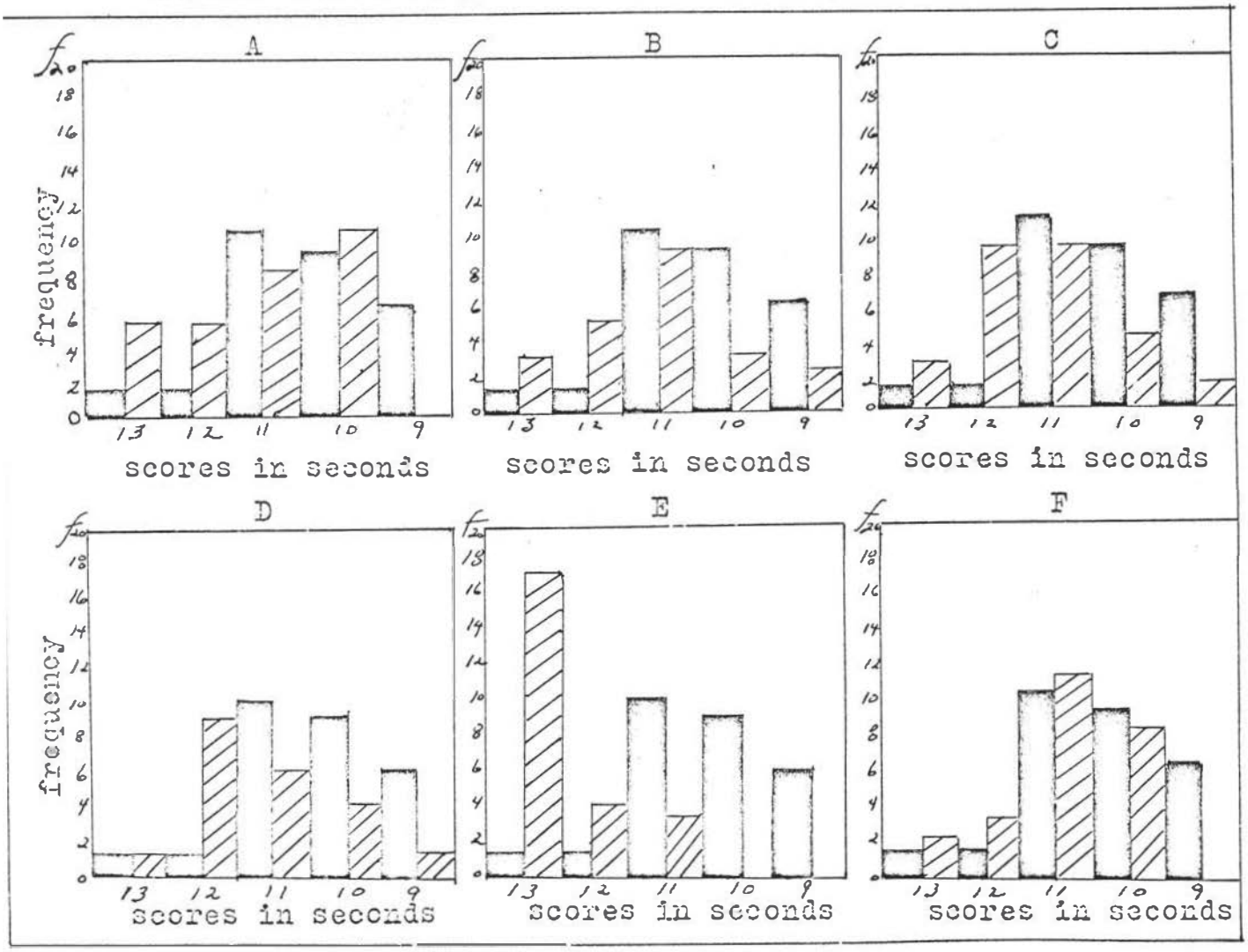
Key: Solid bar = Control Group
Striped bar = Experimental Group (letter above each histogram indicates the group on Table 4

TABLE 5

SHUTTLE RUN, GRADE TWO

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	27	10.2	.77		
Grade Two A (Non-sp.)	23	12.1	1.1	7.	1%
Grade Two B (Non-sp.)	22	11.7	1.18	5.2	1%
Grade Two C (Non-sp.)	21	11.786	.84	6.87	1%
Grade Two D (Non-sp.)	21	11.77	.95	6.2	1%
Grade Two E (Non-sp.)	24	13.3	.98	12.	1%
Grade Two F (Non-sp.)	26	11.32	1.04	4.4	1%

Figure 10.--Histograms of Shuttle Run, Grade Two.



Key: Solid bar = Control Group
Striped bar = Experimental Group (letter above each histogram indicates the group on Table 5)

TABLE 6

SIT AND REACH, GRADE TWO

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	26	2.89	1.03		
Grade Two A (Non-sp.)	22	2.06	1.67	2.06	5%
Grade Two B (Non-sp.)	23	1.68	1.77	2.87	1%
Grade Two C (Non-sp.)	21	2.65	1.779	.568	
Grade Two D (Non-sp.)	20	2.43	1.36	1.23	
Grade Two E (Non-sp.)	25	1.96	1.68	2.4	2%
Grade Two F (Non-sp.)	26	3.22	1.75	.8	

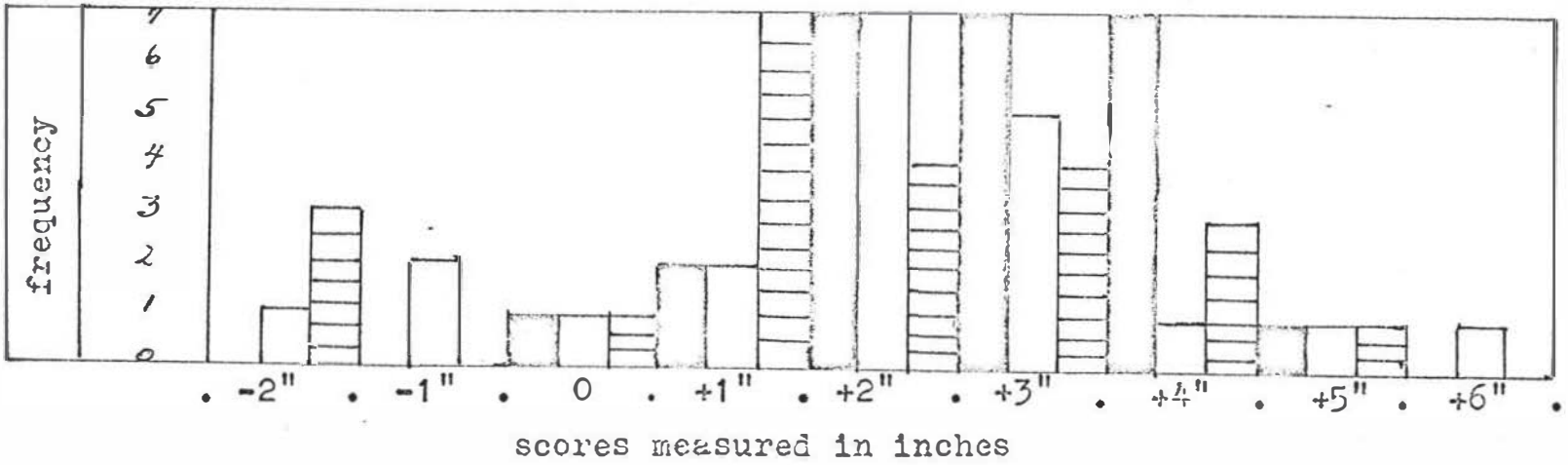


Figure 11.--Histogram of Sit and Reach of Control Group (solid bar), Grade Two A (clear bar), and Grade Two B (horizontal lined bar).

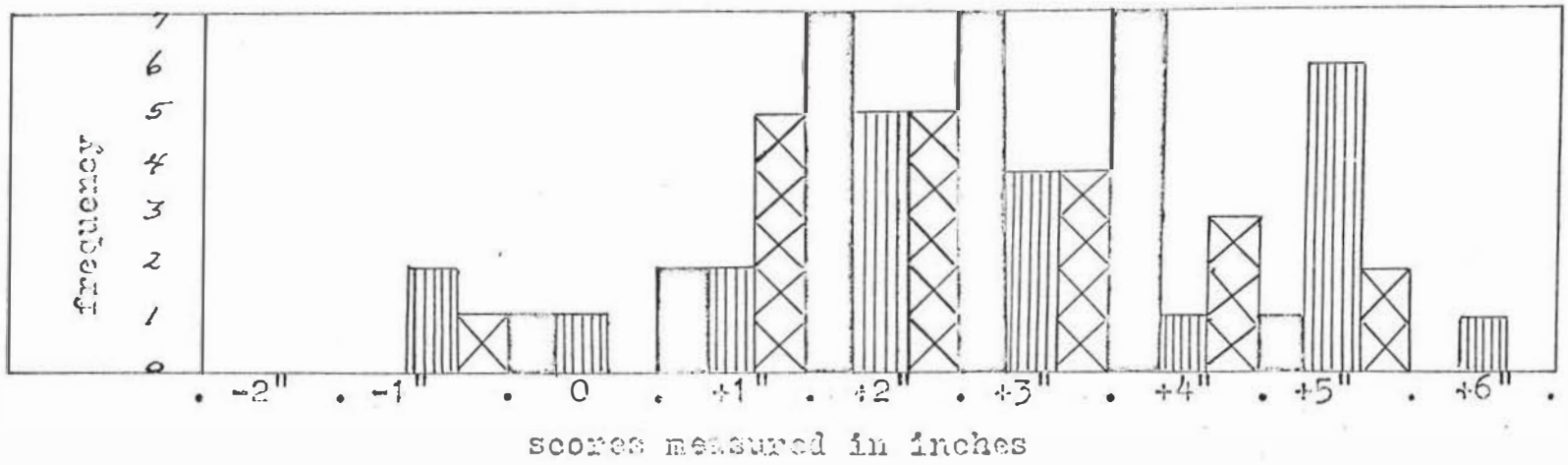


Figure 12.--Histogram of Sit and Reach of Control Group (solid bar), Grade Two C (vertical lines), and Grade Two D (x's).

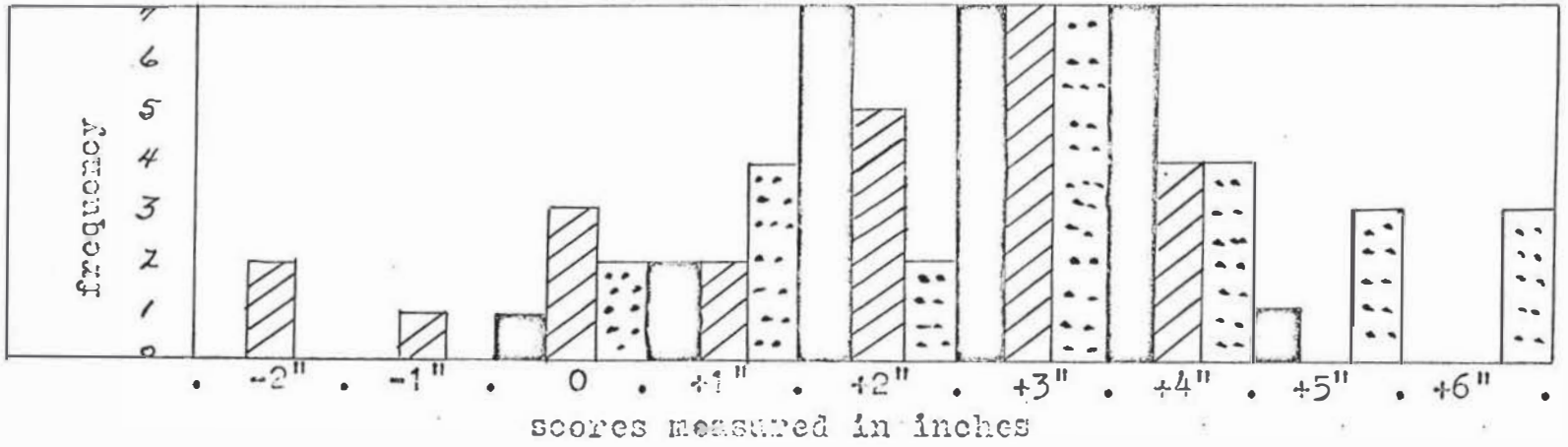


Figure 13.--Histogram of Sit and Reach of Control Group (solid bar), Grade Two E (diagonal lines), and Grade Two F (dotted bar).

Grade Three

(1) Bent Arm Hang: ALL experimental groups significantly lower at better than the 1% level of confidence.
The frequency distributions of experimental groups A, C, D, and E tend to be positively skewed, in contrast to that of the control group, which tends to be rectangular, or evenly distributed. (See Table 7; however, the tally marks for these groups in the Appendix provide a better, though crude, graphic picture of this contrast.

(2) Shuttle Run: 4 groups lower at the 1% or better level of confidence.
1 class, Grade Three E, was not significantly lower (Table 8).

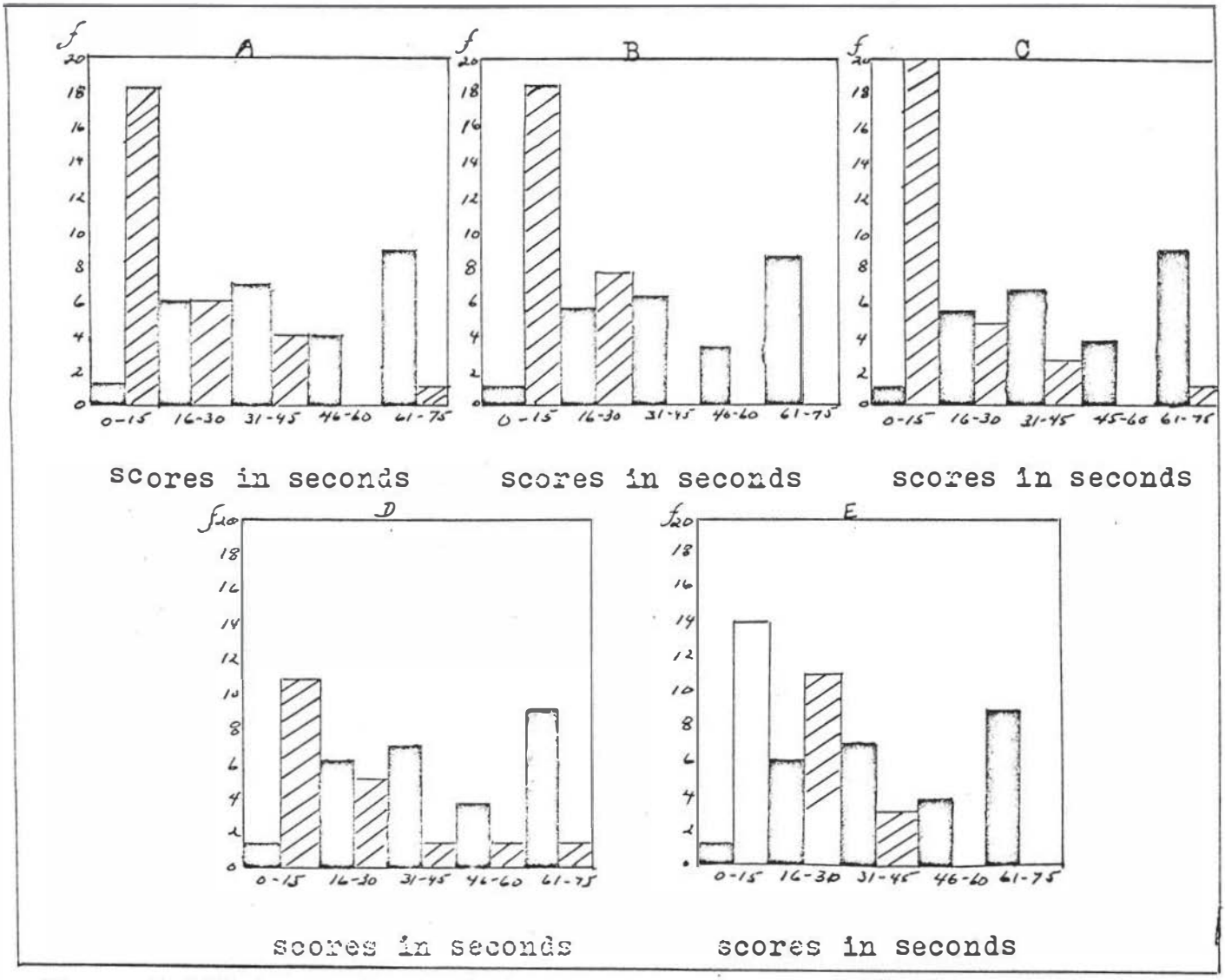
(3) Sit and Reach: 2 groups lower at the 1% level of confidence. (Table 9)
1 class significant at the 2.8 % level.
1 class significant at the 3.6% level.
In 1 class, Grade Three E, there was no significant difference. (This is the same group in which no difference was found on the Shuttle Run--the only two instances in the Third Grade group in which no significant difference was found.)

TABLE 7

BENT ARM HANG, GRADE THREE

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	27	51.17	24.33		
Grade Three A (Nonsp)	29	15.965	14.3	6.5	1%
Grade Three B (Nonsp)	27	13.44	6.78	7.88	1%
Grade Three C (Nonsp)	29	15.3	14.2	6.44	1%
Grade Three D (Nonsp)	19	19.11	17.12	4.8	1%
Grade Three E (Nonsp)	28	17.	10.67	6.67	1%

Figure 14.--Histograms of Bent Arm Hang, Grade Three



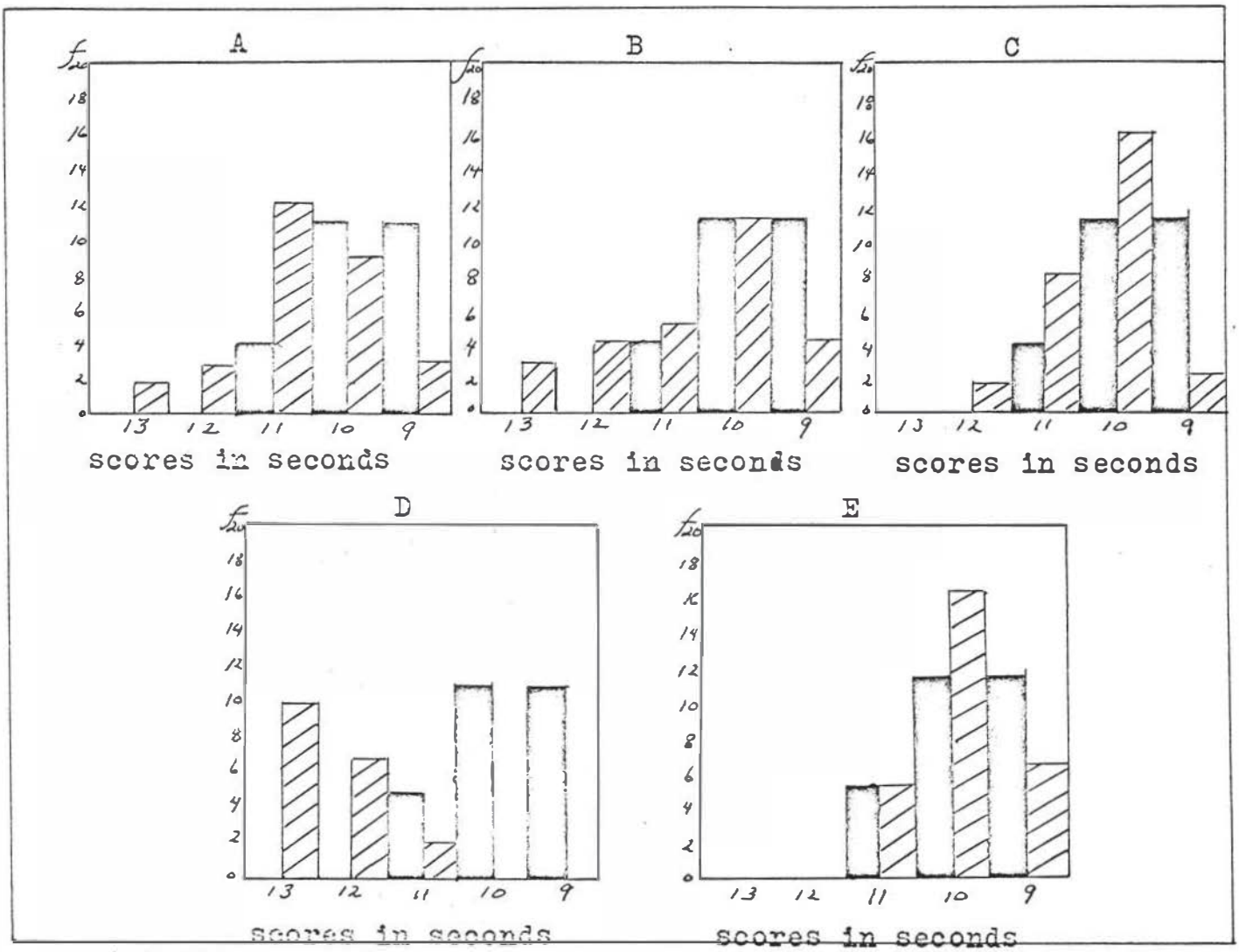
Key: Solid bar = Control Group
Striped bar = Experimental Group (letter above each histogram indicates the group on Table 7)

TABLE 8

SHUTTLE RUN, GRADE THREE

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	26	10.17	.658		
Grade Three A (Nonsp)	29	11.22	1.06	4.3	1%
Grade Three B (Nonsp)	27	11.1	1.22	3.36	1%
Grade Three C (Nonsp)	28	10.79	.744	3.18	1%
Grade Three D (Nonsp)	19	13.3	1.37	10.	1%
Grade Three E (Nonsp)	27	10.38	.67	1.14	

Figure 15.--Histograms of Shuttle Run, Grade Three



Key: Solid bar = Control Group
Striped bar = Experimental Group (letter above each histogram indicates the group on Table 8)

TABLE 9

SIT AND REACH, GRADE THREE

	N	Mean	S. D.	t	Level of Significance
Control Group (Spec.)	26	2.83	1.43		
Grade Three A (Nonsp.)	29	1.8	2.185	2.2	2.8%
Grade Three B (Nonsp.)	25	1.34	1.925	3.09	1%
Grade Three C (Nonsp.)	29	1.34	2.195	2.93	1%
Grade Three D (Nonsp.)	20	1.75	2.01	2.08	3.6%
Grade Three E (Nonsp.)	27	2.68	2.29	.28	

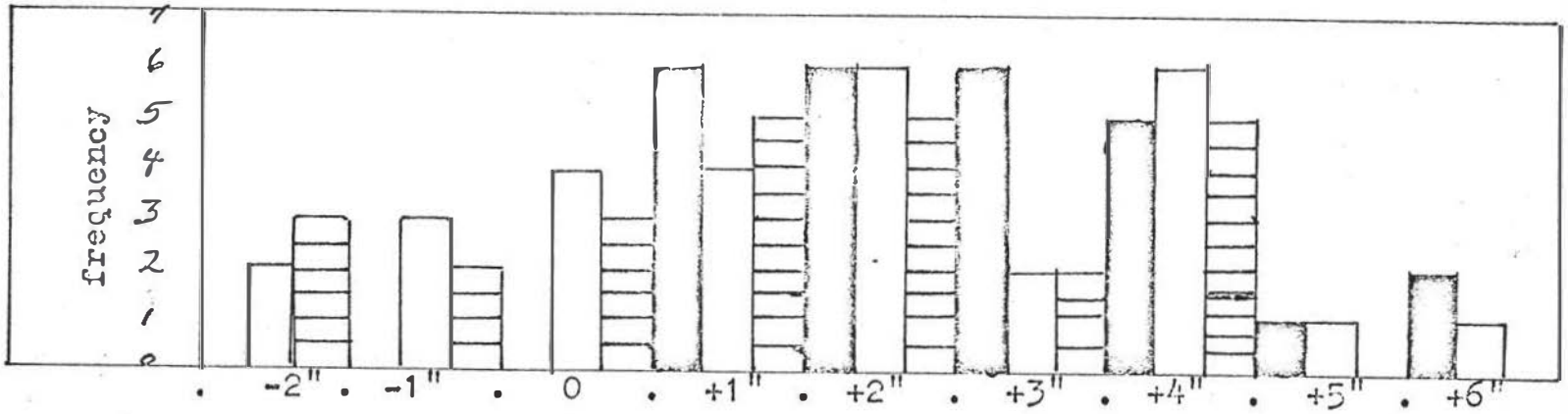


Figure 16.--Histogram of Sit and Reach of Control Group (solid bar), Grade Three A (clear bar), and Grade Three B (horizontal lines).

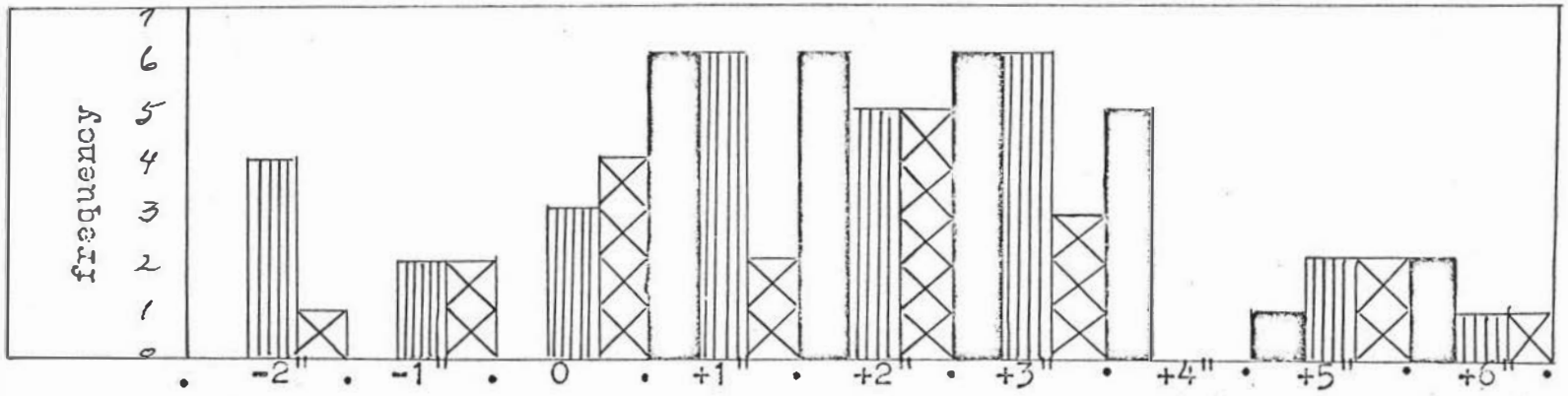


Figure 17.--Histogram of Sit and Reach of Control Group (solid bar), Grade Three C (vertical lines), and Grade Three D (x's).

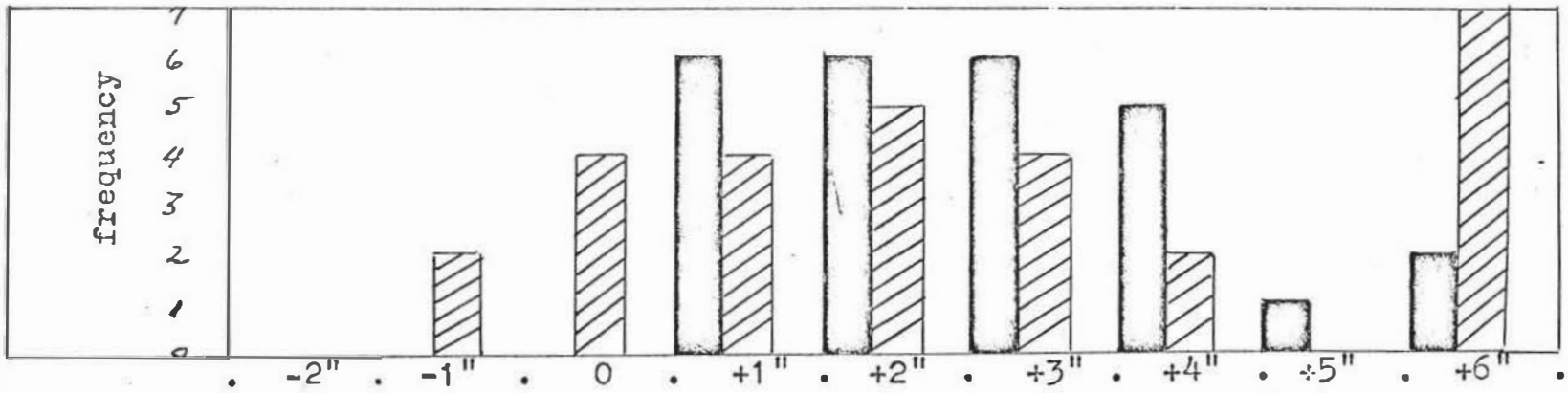


Figure 18.--Histogram of Sit and Reach of Control Group (solid bar), and Grade Three E (diagonal lines).

In the course of administering the tests, the author discovered that the three schools represented by the experimental groups did not have the same physical facilities for their physical education classes:

(a) One school had no indoor facilities especially used for physical education. During inclement weather (and at the time of these tests), classes were confined to the classroom for their physical education. One first grade, one second, and one third grade were tested.

(b) The second school, the largest, had a standard gymnasium in which its indoor physical education program was conducted. From this school, three first grades, four second grades, and three third grades were tested.

(c) The third school, from which one first, one second, and one third grade were tested, provided a playroom (sometimes called a combination activity-lunch room) for its indoor physical education program.

Although the limitations of this study do not permit an examination in depth of the influence (if any) of dissimilar facilities upon achievement in physical education, the author felt that a brief analysis of this element was necessary in order to validate our assumption that no other factor of importance was operating to affect the difference between the control and experimental groups. Table 10 presents a breakdown by school of the scores and their significance (1% only) for further consideration. It should be noted that Grade One E on Table 10 is the same group on Table 1, etc., throughout this study.

In Grade One, groups showing the least difference on the three tests, in order, represent the gymnasium, the playroom, and the classroom. Those with the greatest difference were from the gymnasium, the classroom, and the gymnasium.

In Grade Two, the least difference was found in the gymnasium in all three tests. The greatest difference was found in the playroom, the classroom, and the gymnasium, respectively.

In Grade Three, the least difference is shown in the classroom, the playroom, and the playroom. The greatest difference was from the gymnasium, the classroom,and the gymnasium.

In the school with classroom space only, six of the nine tests revealed significant differences. One test in each grade was NOT significant: Grade One, Sit and Reach; Grade Two, Bent Arm Hang; Grade Three, Sit and Reach. (Table 10.1)

In the school with the gymnasium, twenty-three of the thirty tests were significantly lower at the 1% level of confidence. Five classes revealed a significant difference in all three tests; Grades One A, One D, Two B, Three B, and Three C. Three classes were below low at a significant level on two tests: Grades One B, Two C, and Three A. Two groups were significantly lower than the Control Group on only one test: Grades Two A and Two D. (See Table 10.2)

In the school with the playroom, four of the nine tests were significant at the 1% level. Grade Two F was significantly lower on two tests, Grades One A and Three E were significantly lower on one test each. (Table 10.3)

On the Bent Arm Hang, with a significant difference at the 1% level, were:

2 of the 3 classes in the school with classroom only.
8 of the 10 classes with the gymnasium.
ALL of the 3 classes with the playroom. (Table 10.1-3)

On the Shuttle Run, with a significant difference at the 1% level, were:

ALL of the 3 classes limited to classroom only (with the three highest means obtained on the test)

ALL of the 10 classes with the gymnasium.

1 of the 3 classes with the playroom. (Table 10.1-3)

On the Sit and Reach, with a significant difference at the 1% level, were:

1 of the 3 groups with classroom space only.

5 of the 10 classes with the gymnasium.

NONE of the 3 classes with the activity room. (Table 10)

TABLE 10

COMPARISON OF PERFORMANCE ACCORDING TO THE AVAILABLE INDOOR FACILITIES FOR PHYSICAL EDUCATION IN NON-SPECIALIST SCHOOLS

	Bent Arm Hang			Shuttle Run			Sit and Reach		
	M	S. D.	Sig. dif.	M	S.D.	Sig. dif.	M	S.D.	Sig. dif.
Grade One E	7.01	2.91	yes	14.3	.95	yes	2.48	1.48	no
Grade Two E	23.46	17.6	no	13.3	.98	yes	1.96	1.68	yes
Grade Three D	19.11	17.12	yes	13.3	1.37	yes	1.75	2.01	no

Table 10.1: Classroom space only

	Bent Arm Hang			Shuttle Run			Sit and Reach		
	M	S. D.	Sig. dif.	M	S.D.	Sig. dif.	M	S.D.	Sig. dif.
Grade One B	7.87	4.83	yes	13.01	1.25	yes	2.02	1.77	yes
Grade One C	9.4	6.57	yes	12.9	1.07	yes	1.5	1.96	yes
Grade One D	12.53	7.82	yes	13.05	.93	yes	1.9	1.76	yes
Grade Two A	19.04	17.5	no	12.1	1.1	yes	2.06	1.67	no
Grade Two B	15.83	9.75	yes	11.7	1.18	yes	1.68	1.77	yes
Grade Two C	13.28	9.48	yes	11.79	.84	yes	2.65	1.78	no
Grade Two D	25.3	16.6	no	11.77	.95	yes	2.43	1.36	no
Grade Three A	15.96	14.3	yes	11.22	1.06	yes	1.8	2.18	no
Grade Three B	13.44	6.78	yes	11.1	1.23	yes	1.34	1.93	yes
Grade Three C	15.3	14.2	yes	10.79	.74	yes	1.34	2.19	yes

Table 10.2: Gymnasium

	Bent Arm Hang			Shuttle Run			Sit and Reach		
	M	S. D.	Sig. dif.	M	S.D.	Sig. dif.	M	S.D.	Sig. dif.
Grade One A	9.	3.09	yes	12.16	1.12	no	2.22	1.78	no
Grade Two F	13.	7.	yes	11.32	1.04	yes	3.22	1.75	no
Grade Three E	17.	10.67	yes	10.38	.67	no	2.68	2.29	no

Table 10.3: All-purpose or activity room

E. SUMMARY OF FINDINGS

On the Bent Arm Hang, 13 classes were significantly below at the 1% level of confidence. The remaining 3 classes, with no significant difference, were all at the second grade level. The greatest difference was found in Grade Three, then in Grade One.

On the Shuttle Run, 14 classes were significantly below at the 1% level of confidence. No significant difference was found in 2 classes, one first grade and one third grade. The greatest difference in all grades was found in the school which has no indoor facilities for play, but has large, wide-open areas for long distance running, rather than stopping, changing direction, speed, et. (1-E, 2-E, 3-D on Table 11)

On the Sit and Reach, 4 classes were significant at the 1% level of confidence. Two classes (2-F and 3-A on Table 11) were lower at the 2% and 2.8% level, respectively. Two classes (1-D and 3-D on Table 11) were lower at the 5% level of confidence. One class (2-F on Table 11) scored higher than the Control Group, but not significantly. The remaining classes were lower, but not significantly. The degrees of difference increase with grade level, with the greatest difference in Grade Three. The Mean for the Control Group remained nearly the same for all three grades: 2.83 to 2.89 to 2.83, while the average Mean for the Experimental Groups ranged from 2.02 to 2.33 to 1.78. Scores within the Control Group (specialist)ranged from 0 to 6.5 (with only one score at zero). In the Experimental groups (non-specialist), scores ranged from -3 to +7. With the exception of Grade Two F, each of the Experimental Groups had from 2 to 7 minus scores.

In Grade One (5 groups), ALL were significantly lower on the Bent Arm Hang; four were significantly lower on the Shuttle Run, and one significantly lower on the Sit and Reach. (All at the 1% level of confidence) (Table 11)

In Grade Two (6 groups), three were significantly lower on the Bent Arm Hang, ALL were significantly lower on the Shuttle Run, and one was significantly lower on the Sit and Reach. (at the 1% level of confidence) (Table 11)

In Grade Three (5 groups), ALL were significantly below on the Bent Arm Hang, four were significantly below on the Shuttle Run, and two were significantly lower on the Sit and Reach. (at the 1% level of confidence) (Table 11)

The author was unable to ascertain any definite pattern of performance relative to facilities, with the exception of the Shuttle Run in the school with only classroom space for indoor physical education. All of these means were the highest (in this case, the worst scores) obtained in each of the grades. However, means sufficiently high to be significant at the 1% level of confidence were also obtained from ALL of the classes in the school with the gymnasium. (Tables 10.1 and 10.2) It is the author's considered judgment that the greater degree of difference is merely a reflection of the handicapping conditions (classroom and hallway, no gym shoes) under which the test was administered.

In addition, the great variance of scores on all tests within groups from one particular school would tend to indicate that the facility had little bearing upon the scores on the tests.

TABLE 11

Comparison of the significance of difference between mean scores of all groups for the three test items.

TEST	COMPARISONS															
	1-A	1-B	1-C	1-D	1-E	2-A	2-B	2-C	2-D	2-E	2-F	3-A	3-B	3-C	3-D	3-E
test 1	5.2*	5.8*	5.4*	5.1*	5.2*	1.8	2.9*	3.3*	.58	.95	3.9*	6.5*	7.9*	6.4*	4.8*	5.7*
test 2	1.51	4.4*	4.3*	5.2*	8.7*	7.*	5.2*	6.9*	6.2*	12.*	4.4*	4.3*	3.4*	3.2*	10. *	1.1
test 3	1.2	1.7	2.7*	2.	.74	2.1	2.9*	.57	1.28	2.4	.8	2.2	3.1*	2.9*	2.1	.78

*Significant at the 1% level of confidence

test 1: Bent Arm Hang
test 2: Shuttle Run
test 3: Sit and Reach

F. CONCLUSIONS

On the basis of the procedures used and the analysis of obtained data, the following conclusions are drawn from this study:

1. With few (3 out of 16) exceptions, children taught by the physical education specialist exhibit significantly greater arm and shoulder-girdle strength than children in physical education classes taught by the classroom teacher.

2. Children taught by the physical education specialist also were found to have significantly greater agility than children taught by the classroom teacher. (Exceptions: 2 of 16)

3. On the test of flexibility, the Sit and Reach, the specialist children exhibited more flexibility than 15 of the 16 non-specialist groups, however, at a significant level in only 4 of the 16. Several possibilities are immediately suggested:

(a) The lack of strong, well-developed leg muscles in the non-specialist groups would permit greater hip flexibility.

(b) Leighton[1] summarized some of the significant findings of research reports dealing with flexibility, and concluded that flexibility is a specific factor, not a general factor, and "no one test item can determine whether or not an individual is flexible save for the particular joint or joints involved in that movement." As a specific factor which has been found to parallel present activity, its value in this study is questionable.

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1. Jack R. Leighton, "On the Significance of Flexibility for Physical Educators," Journal of Health, Physical Education, and Recreation, (November, 1960), pp. 27-28+.

(c) The complete reversal of the pattern revealed on the other two tests tends to indicate that the explanation lies in the test itself or in the statistical treatment of the data, rather than in the subjects. Analysis of the data on the Sit and Reach in the specialist groups, it will be recalled, revealed a range in raw scores from 0 to +6.5, with just one score at zero (in contrast to the non-specialist range from -3 to +7 and 15 of the 16 groups had two or more minus scores). In addition, the mean for the specialist group remained almost constant (.06 difference in all three grades, compared to the non-specialist average means: 2.02 to 2.89 to 1.74). Both of these findings are of practical importance[2] to the hypothesis; however, this practical importance was not reflected in the significance test, perhaps due to poor precision or poor procedure with respect to this test.

5. It is interesting to note that the facilities available to the non-specialist groups had no readily discernible effect upon performance. And, although these widely varied facilities were incidental (and accidental) to the study, it is perhaps through these that the role of the teacher is most clearly defined. It seems reasonable to conclude on the basis of these observations that far more important than the space provided for physical education classes is the use which is made of this space.

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2. A. T. Slater-Hammel, "Matched Experimental Groups, Research Quarterly, (March, 1965), p. 117.

G. EMPIRICAL OBSERVATIONS

The author offers the following observations, relevant to the study and the implications of the findings reported:

(1) Exception may be taken to the value of physical fitness measures in the primary grades. The selection of physical or motor fitness as the criterion for comparison is not to be taken to imply that this is the only, or most important, objective of the elementary physical education program. Although fully appreciative of the goal of total fitness-spiritual, mental, emotional, social, cultural, as well as physical--it is this writer's contention that physical-motor fitness is basic to the other forms of fitness, the means by which all others are best obtained, and the only responsibility uniquely that of the physical educator in the educative process. Physical fitness, per se, is not the problem or goal of elementary physical education; however, because physical fitness has a close causal relationship with social and psychological development, and because physical fitness in the early formative years lays the foundation for a lifetime interest in activity and physical well-being--just such a concept of physical fitness seemed to the author ample reason to designate this area as the criterion for comparison.

(2) In no way should the findings reported herein be so construed to infer that the classroom teacher cannot help her students attain desirable levels of physical and motor fitness. Very stringent lines were drawn for this test, and the reader is cautioned that extension of the findings is necessarily limited to these same stringent lines: (a) The specialist was a very highly competent physical education teacher, in short, a master teacher. (b) The classroom teachers in the study were solely responsible for their respective physical education classes, with no administrative provision for guidance or assistance. In addition, the average age of these classroom teachers was 44, with eight of

the sixteen teachers 44 or more years old. Fewer than half had completed requirements for the Bachelor's Degree.[1]

This combination of factors must surely have affected the extremely high significant differences which were found in some cases.

(3) It is the carefully considered judgment of the author, upon completion of the study, that the value of tests of this type are extremely limited in practical application. No one has yet succeeded in devising a test which will measure accurately the success of a teacher, because of the multitude of variables which influence the teaching-learning experience. Studies which explore the relationship of specific activities to child development, or which search for better procedures and better methods, might provide findings useful to any teacher who teaches physical education in the elementary grades.

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1. National averages given on pp. 16-17 in Chapter II.

CHAPTER VI
CONCLUSIONS

In the professions, academic storms seem quite real when one is involved. In retrospect, they often evolve into teapot tempests, without progeny. Constantly, scientific controversies resolve themselves into differences about the meaning of words. A great deal has been written about the role of the physical education specialist in the elementary school; consequently, there is an inclination to write a great deal more about what has been written. However, the author will be content if the following two conclusions are deemed major points and reasonable summaries of the preceding evidence:

A. First and foremost, the author takes issue with the issue: the question, "Who should teach physical education in the elementary grades--the classroom teacher or the specialist?" cannot be answered satisfactorily because of the negation implied. Progress in education is halted when the issues become semantic traps for all who dare participate.

The self-contained classroom has been the most widely used pattern of organization in the elementary school for more than one hundred years. This wide use continues, but the concept of the self-contained classroom has undergone some changes and modifications. Unfortunately, changes in concept have not yet brought about a change in name, and the term itself often leads to misunderstanding and confusion.

At the elementary level, grouping practices as related to the horizontal curricular organization (division of the student body among available teachers) frequently have been reduced to debate over the virtues of departmentalization as contrasted with the self-contained classroom. This is an over-simplification: the curriculum may be departmentalized, the classroom self-contained.

The curriculum of the elementary school is largely departmentalized: teachers tend to teach reading, spelling, physical

education, arithmetic, social studies, art, music, science and music as separate subjects in separate blocks of time. There may be no bells during the day, but pupils move from activity to activity according to a schedule and the clock, nevertheless.

In addition, such terms as "the whole child," "integration of learning," etc. have been used without clear-cut definitions, and, hence, have only clouded the issue. It is a sad commentary, but when most writers have taken sides in the controversy, the case which has been put forward typified a good classroom teacher and a poor physical education specialist, or a good physical education specialist and a poor classroom teacher.

B. The final conclusion drawn from this study is a perplexing one: there is very little evidence (among textbook writers, especially) that the physical education profession is cognizant of the teaching-learning potential in the primary grades. The general feeling expressed is that special skills are necessary only when one teaches the upper grade activities, presumably, basketball, softball, etc. This viewpoint, one would expect from writers who have not specialized in the science (or art) of movement---when actually, this writer found the reverse to be true. More psychologists and elementary education specialists voiced an awareness of and appreciation for the depth of the learning experience in physical education in the early, developmental years.

Elizabeth Halsey, alone among a great number of writers of texts on elementary physical education, expressed this key concept, elegant in its simplicity, when she wrote:

> "....even in a modern school the learning possibilities of play are not always understood. Inherently attractive to children, play does not provide everything a child needs from his physical education experiences, nor are all games of equal value. While most games teach the usefulness of

rules in giving every player a fair chance, some games actually promote cheating. While many games give fine activity to all, some games keep most of the children standing still. In general, games provide excellent practical training in getting along with other children. However, some games are so structured that the experience of being "It" may do damage to the child who feels rejected by the rest. Therefore, discrimination in selecting games and wisdom in guiding their play are necessary to get the best educational value from their use. This fact has become increasingly clear to physical education teachers during the past decade."

"Moving for the fun of it, and achieving physical competence to fulfill the wholeness of personal development will always be valued by humans. To spread these values to all children in school in such a way that they will persist in adult life will take more imagination and the invention of better procedures than we now use."[1]

The development of competent personnel at the elementary school level is of basic importance to the physical education profession. It is here that the groundwork is laid for all those qualities being measured in the current re-examination of education and physical education. If anything is the sine qua non of excellent education it is the competent teacher, who alone can stimulate the imagination of students, can awaken in them the desire to learn, can imbue them with a sense of curiosity about the world, can cultivate and nurture the instinctive creative imagination of the small child. If education is to assume its role today, it must be staffed by competent teachers, liberally trained in general education, well-grounded in particular disciplines, and skilled in the techniques of teaching. Physical education can only play its very important part if it is taught by teachers who know its scientific bases and its educational importance, and have the skill to implement this knowledge in the school program.

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1. Elizabeth Halsey, Inquiry and Invention in Physical Education, pp. 15-16 and 101.
(Italics are this writer's)

B I B L I O G R A P H Y

BIBLIOGRAPHY

Books

American Association of Health, Physical Education, and Recreation. Children in Focus. 1954 Yearbook. Washington, D. C.: the Association, 1954.

Andrews, Gladys, Sa rborn, Jeannette, and Schneider, Elsa. Physical Education for Today's Boys and Girls. Boston: A lyn and Bacon, Inc., 1960.

Barrow, Harold M, and McGee, Rosemay. A Practical Approach to Measurement in Physical Education. Philadelphia: Lea and Febiger, 1964.

Barzun, Jacques. The House of Intellect. New York: Harper and Brothers, 1959.

Brown, Camille, and Cassidy, Rosalind. Theory in Physical Education. Philadelphia: Lea and Febiger, 1963.

Cassidy, Rosalind. Counseling in the Physical Education Program. New York: Appelton-Century-Crofts, Inc., 1959.

Davis, Elwood C., and Lawther, John D., Successful Teaching in Physical Education. 2nd ed., New York: Prentice-Hall, Inc., 1948.

Fait, Hollis F. Physical Education for the Elementary School Child. Philadelphia: W. B. Saunders Company, 1964.

Grambs, Jean Dresden. Schools, Scholars, and Society. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1965.

Halsey, Elizabeth. Inquiry and Invention in Physical Education. Philadelphia: Lea and Febiger, 1964.

Halsey, Elizabeth, and Parter, Lorena. Physical Education for Children: A Developmental Program. New York: Dryden Press, 1958.

Hinman, Strong, Elementary School Physical Education. New York: Harper and Brothers, 1939.

Humphrey, James H. Physical Education in the Elementary Grades. New York: Prentice-Hall, Inc., 1958.

Humphrey, James H., Jones, Edwina, and Haverstick, Martha J. Readings in Physical Education for the Elementary School. Palo Alto, Calif.: The National Press, 1960.

Irwin, Leslie W. The Curriculum in Health and Physical Education. Dubuque, Iowa: William C. Brown Company, 1951.

Johnson, Palmer O. Statistical Methods in Research. New York: Prentice-Hall, Inc., 1949.

Larson, Leonard A., and Yokum, Rachel Dunaven. Measurement and Evaluation in Physical, Health, and Recreation Education. St. Louis: the C. V. Mosby Co., 1951.

LaSalle, Dorothy. Guidance of Children through Physical Education. New York: the Ronald Press Company, 1957.

_____. Physical Education for the Classroom Teacher. New York: A. S. Barnes and Co., 1937.

Lindquist, E. F. Statistical Analysis in Educational Research. Cambridge, Mass.: the Riverside Press, 1940.

_____. A First Course in Statistics. Revised ed. Cambridge, Mass.: the Riverside Press, 1942.

Logan, Lillian M., and Logan, Virgil. Teaching the Elementary School Child. Boston: Houghton-Miflin Co., 1961.

Miller, Arthur G., and Whitcomb, Virginia. Physical Education in the Elementary School Curriculum. 2nd ed. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963.

Mosston, Muska, Developmental Movement. Columbus, Ohio: Charles E. Merrill Books, Inc., 1965.

O'Keefe, Patric, and Aldrich, Anita. Education through Physical Activities. St. Louis: the C. V. Mosby Co., 1955.

Otto, Henry J. Elementary-School Organization and Administration. 3rd ed. New York: Appleton-Century-Crofts, Inc., 1954.

Otto, Henry J., and Sanders, David C. Elementary School Organization and Administration. 4th ed. New York: Meredith Publishing Co., 1964.

Petersen, Dorothy G. The Elementary School Teacher. New York: Appleton-Century-Crofts, Inc., 1964.

Salt, E. Benton, and Others. Teaching Physical Education in the Elementary School. New York: A. S. Barnes and Co., 1942.

Sanborn, Marion Alice, and Hartman, Betty G. Issues in Physical Education. Philadelphia: Lea and Febiger, 1964.

Sehon, Elizabeth L., and Others. Physical Education Methods for Elementary Schools. Philadelphia: W. B. Saunders Company, 1953.

Sharman, Jackson R. Modern Principles of Physical Education. New York: A. S. Barnes and Co., 1937.

Shuster, Albert R., and Wetzler, Wilson F. Leadership in Elementary School Administration and Supervision. Cambridge, Mass.: the Riverside Press, 1958.

Van Hagan, Winifred, Dexter, Genevie, and Williams, Jesse F. Physical Education in the Elementary School. Sacramento, Calif.: Department of Education, 1951.

Vannier, Maryhelen, and Foster, Mildred. Teaching Physical in Elementary Schools. 3rd ed. Philadelphia: W. B. Saunders Company, 1963.

Whitehead, Alfred North. The Aims of Education. New York: the Macmillan Co., 1929.

Reports

Athletic Institute. Physical Education for Children of Elementary School Age. Report of the National Conference on Physical Education for Children of Elementary School Age. Chicago: the Athletic Institute, 1951.

American Association of Health, Physical Education, and Recreation. Proceedings. 57th Annual Convention. Washington, D. C.: the Association, 1952.

Dean, Stuart E. Elementary School Organization and Administration, Bulletin No. 11. Washington, D. C.: U. S. Department of Health, Education, and Welfare, 1960.

Educational Policies Commission of the NEA. Contemporary Issues in Elementary Education. Washington, D. C.: the Association, 1960.

Falize, Julien, "Achieving Quality in Physical Education,: 6th International Congress. International Council on Health, Physical Education, and Recreation. Washington, D. C.: the Council, 1964.

Fund for the Advancement of Learning. Decade of Experiment. New York: the Fund, 1961.

Livingston, A. Hugh, and Corrubia, Helen. Percentile Norms for Selected Tests of Physical Fitness for Boys and Girls in the Elementary Grades. Tulsa, Okla.: Tulsa Public Schools, July, 1960.

NEA Research Division and American Association of School Administrators. Departmentalization in Elementary Schools, Educational Research Circular No. 7. Washington, D. C.: the Association, 1965.

Schneider, Elsa. Physical Education in Urban Elementary Schools, Office of Education Bulletin No. 15. Washington, D. C.: U. S. Government Printing Office, 1959.

Articles and Periodicals

Abernathy, Ruth, "Implications for Physical Education in the current Re-examination of American Education." Journal of Health, Physical Education, and Recreation, XXXII:1 (January, 1961).

Ackerland, George, "Report on Teacher Attitudes toward Self-Contained Classroom and Semi-Departmental Types of' Elementary School Organization." Phi Delta Kappan, XL (April, 1959).

Alexander, William M., and Havighurst, Robert J. "Bases for Curriculum Change." National Elementary Principal, XLII:1 (September, 1962).

Anderson, Richard C., "The Case for Teacher Specialization in the Elementary School." Elementary School Journal, LXII (February, 1962).

Baker, Gertrude M., "Supervision of Physical Education in the Elementary School. Part I The Classroom Teacher's Viewpoint." Research Quarterly, XXV:4 (December, 1954).

_____. "Supervision of Physical Education in the Elementary School. Part II The Supervisor's Viewpoint." Research Quarterly, XXIII:4 (December, 1952).

_____. "A Survey of the Administration of Physical Education in Public Schools in the United States." Research Quarterly, XXXIII:4 (December, 1962).

Barnes, Roland E., "A Survey of Status and Trends in Departmentalization in City Elementary Schools." Journal of Educational Research, LV (March, 1962).

Broadhead, Fred C., "Pupil Adjustment in the Semi-Departmental School." Elementary School Journal, LX (April, 1960).

Diekhoff, John S., "The Last Encyclopedists." Saturday Review of Literature, XLV: 37 (September 15, 1962).

Doherty, J. P., "Let's Stop Playing Games." Physical Educator, XXII:1 (March, 1965).

Donnelly, Alice, "Let's Ask the Classroom Teacher." Journal of Health, Physical Education, and Recreation, XXIX:9 (November, 1958).

Duncan, Ray O., And Carruth, Wincie, Editors, "Basic Issues." Journal of Health, Physical Education, and Recreation, XXXII:8 (November, 1961).

Dunn, Mary, "Should There Be Any Set Type of Elementary School Organization?" Elementary School Journal, LIII (December, 1952).

"Elementary School Physical Education: A Symposium." Journal of Health, Physical Education, and Recreation, XXXI:2 (February, 1960).

"Elementary School Organization: A Symposium." National Elementary Principal, XLI:3 (December, 1961).

Goodlad, John I., "Changing Curriculum of America's Schools." Saturday Review of Literature, XLVI:46 (November 16, 1 63).

Goodlad, John I., "Classroom Organization," Encyclopedia of Educational Research, ed. Chester W. Harris, III, 221-6. New York: the Macmillan Company, 1960.

Goodlad, John I., and Rehage, Kenneth, "Unscrambling the Vocabulary of School Organization." NEA Journal, LI:8 (November, 1962).

Godfrey, Barbara, "Motor Therapy and School Achievement." Journal of Health, Physical Education, and Recreation, XXXV:5 (May, 1964).

Hagman, Harlan A., "Shall We Departmentalize?" Nation's Schools, XXVIII (July, 1941).

Hansen, Richard G., "The Specialist: Threat or Challenge?" National Elementary Principal, XLII:3 (January, 1963).

Jameson, Marshall, "How Shall We Teach?" National Elementary Principal, XL:2 (December, 1960).

Jarvis, Oscar T., "The Door Opens in Self-contained Classrooms to Let in Specialists." Nation's Schools, LXXIV:6 (December, 1964).

Jones, Steffi K., "It's Time for a Change in Physical Education." Instructor, LXVII:2 (October, 1957).

Kowitz, Gerald T., "Specialists--What Contribution to Learning?" National Elementary Principal, XLI:5 (February, 1962).

Leighton, Jack R., "On the Significance of Flexibility for Physical Educators." Journal of Health, Physical Education, and Recreation, XXXI:8 (November, 1960).

Livingston, A Hugh, "Does Departmental Organization Affect Children's Adjustment?" Elementary School Journal, XL (January, 1961).

Lobdell, Lawrence O., and VanHoss, William J., "The Self-contained Classroom in theElementary School." Elementary School Journal, LXIII (January, 1963).

Miel, Alice, "The Self-contained Classroom: An Assessment." Teachers College Record, LIX (February, 1958).

Mareau, Robert J., "A School Administrator Looks at Physical Education." School Activities, XXVII (September, 1956).

Prince, Thomas C., "Less Departmentalization in the Elementary Schools." American School Board Journal, III:3 (September, 1945).

Puckett, John, "An Emphasis on Elementary Physical Education: A Superior Program for All." Physical Educator, XXII:2 (May, 1965).

Research Division, NEA, "Principals' Opinions About Organization." Research Bulletin, XL:4 (May, 1962).

_____. "Status of Public School Teachers, 1965." Research Bulletin, XL:3 (October, 1965).

Robinson, Glen, "Principals' Opinions About School Organization." National Elementary Principal, XLI:2 (November, 1961).

Ross, Bertha M., "A Study of the Performance of Boys and Girls Taught by the Specialist and Non-Specialist." Research Quarterly, XXXI:2 (May, 1960).

Rouse, Margaret, "A Comparison of Curricular Practices in Departmental and Nondepartmental Schools." Elementary School Journal, XLVII (September, 1946).

Saxe, Richard W., and Hinkel, Erna, "Special Teachers Should Teach, Not Just Advise." Instructor, LXX (October, 1960).

Rarick, G. Lawrence, "Physical Education," Encyclopedia of Educational Research, ed. Chester W. Harris, III, 973-995. New York: the Macmillan Company, 1960.

Shane, Harold G., and Polychrones, James I., "Elementary Education--Organization and Administration," Encyclopedia of Educational Research, ed. Chester W. Harris, III, 421-30. New York: the Macmillan Company, 1960.

Shrader, Robert, and Hallstrom, Thomts L., "The Organizational Status of Intermediate Grades (4, 5, 6) Physical Education in the Elementary School." Physical Educator, XXI:4 (December, 1964).

Sizer, Theodore R., "Reform Movement or Panacea?" Saturday Review of Literature, XVII:25 (June 19, 1965).

Slater-Hammel, A. T., "Matched Experimental Groups," Research Quarterly, XXXVI:1 (March, 1965).

Smith, Mortimer, "Faddishness in Education." Saturday Review of Literature, XLVIII:34 (August 21, 1965).

"Some Issues Facing the Elementary School." NEA Journal, XLIX:6 (September, 1962).

Stuart, Frances R., "A Physical Education Program." Instructor, LXIX (April, 1960).

Troester, Carl A., Jr., "Report of the President." Journal of Health, Physical Education, and Recreation, XX:5 (May, 1950).

Tyler, Ralph W., and Miller, Richard I., "Social Forces and Trends," NEA Journal, LI:6 (September, 1962).

Woodring, Paul, "The Schools Educate Themselves." Saturday Review of Literature, XLVII:35 (August 29, 1964).

Woods, Roy C., "Relative Merits of Departmental and Non-Departmental Elementary Schools." Peabody Journal of Education, XXXVII (November, 1959).

Zimmerman, Helen, "Physical Performance of Children Taught by Special Teachers and by Classroom Teachers." Research Quarterly, XX:3 (October, 1959).